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THE

NATION'S BUSINESS





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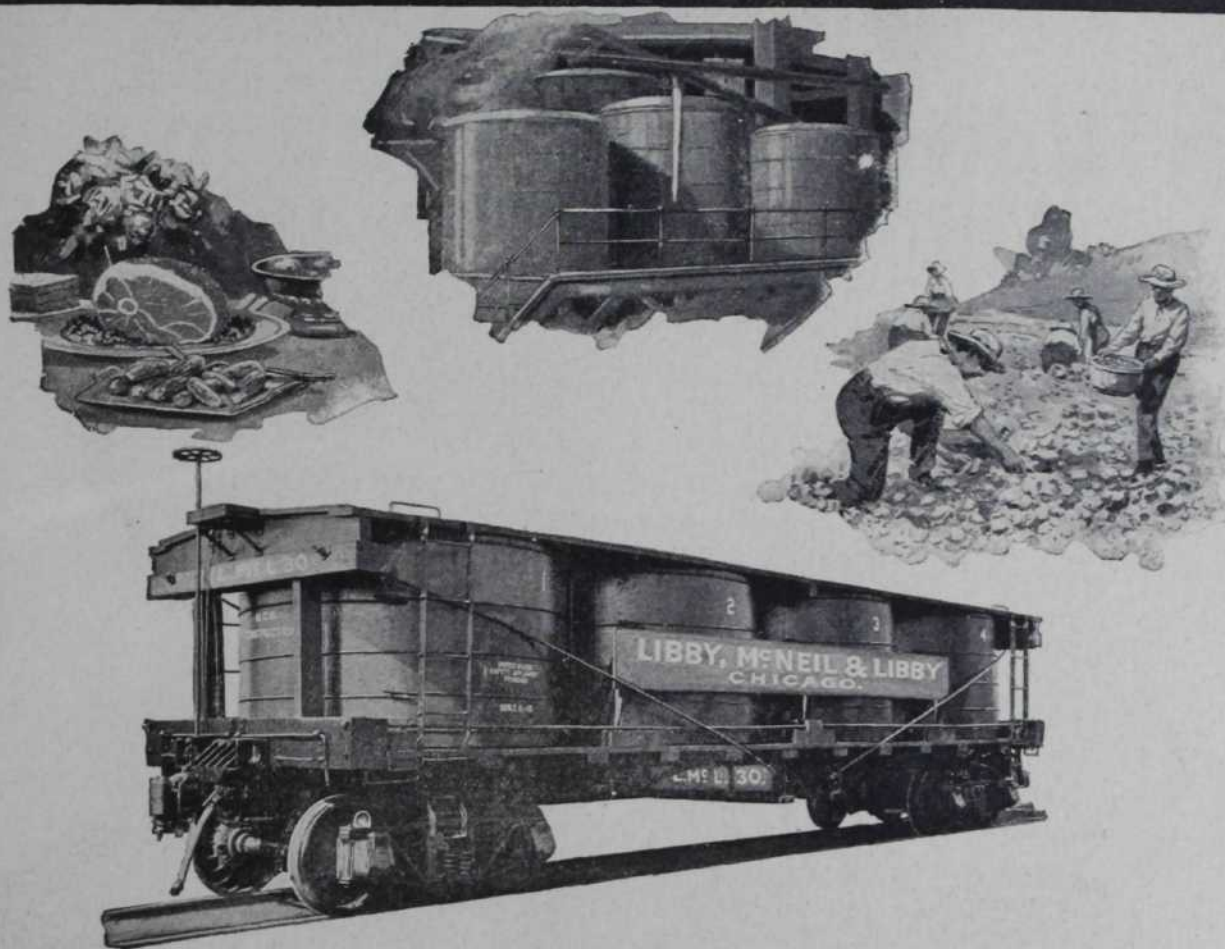
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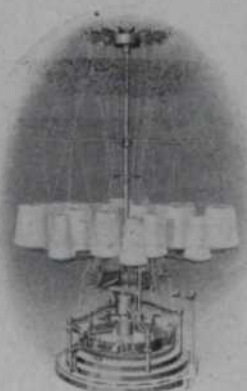
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THERE are unusual opportunities in St. Louis for knitting mills and cotton mills. The immense market in the great St. Louis trade territory, the nearness to raw materials, the rail and water shipping facilities meet the requirements for the successful manufacture and distribution of knit goods and textiles. The annual sales of drygoods in St. Louis total more than \$200,000,000.

St. Louis is close to the center of the cotton supply. The Mississippi River gives an unlimited water supply. Abundant hydro-electric current is obtained from the Keokuk Dam. One-twentieth of all of the coal mined in the world is mined within 100 miles of St. Louis. The female labor supply is approximately 53,000. A St. Louis bleachery, now in operation, has capacity for the output of several mills. The climatic conditions are excellent.

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Cotton spinning and textile mills
Dye stuffs
Steel and copper wire
Machine tools and tool machinery
Automobile accessories and parts
Drop forge plants
Tanneries and leather products

Malleable iron castings
Farm implements
Rubber products
Screw machine products
Locomotive works
Blast furnaces
Cork products
Small hardware

The booklet, "St. Louis as a Manufacturing Center," gives details that will interest you. A letter will bring it. Address

Director New Industries Bureau

St. Louis Chamber of Commerce

St. Louis, U. S. A.



Work must be truly enjoyable to be done well

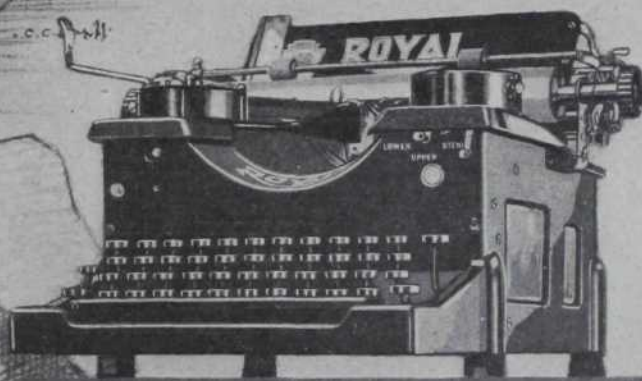
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New York

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Northern White Pine
Idaho White Pine
Western Soft Pine*



*Arkansas Soft Pine
Washington Red Cedar
Red Fir and Larch
Norway Pine*

WHY THIS TRADE-MARK MEANS A NEW SERVICE IN THE LUMBER BUSINESS

IN nearly everything we buy or use we have become accustomed to look for a standard article of known merit.

We want to know where it comes from, who is back of it, what can be expected of it, and how it compares in quality and price with similar merchandise sold for a like purpose.

This is a busy world. We cannot take the time to learn solely by our mistakes; we may learn too late.

We cannot wait to test every coin we accept in payment for goods or services. So we have a standard currency—the Government's stamp or trade-mark to certify its worth.



For like reasons we insist on products with the stamp or trade-mark of responsible manufacturers to assure us the value we pay for.

Some of these makers' stamps are almost as dependable as the mint-mark on a coin.

Yet when it comes to lumber most of us know very little about it; what species or grade of wood is best for the purpose we have in mind, where it comes from, who manufactures it.

As substantial factors in the lumber business, the Weyerhaeuser people want you to think more about the wood you use. To this end they will supply to lumber dealers and to the public any desired information as to the qualities of different species and the best wood for a given purpose.



This service will be as broad and impartial as they know how to make it. They are not partisans of any particular species of wood. They advise the best lumber for the purpose, whether it is a kind they handle or not.

What they advocate is conservation and economy through the use of the right wood in its proper place.

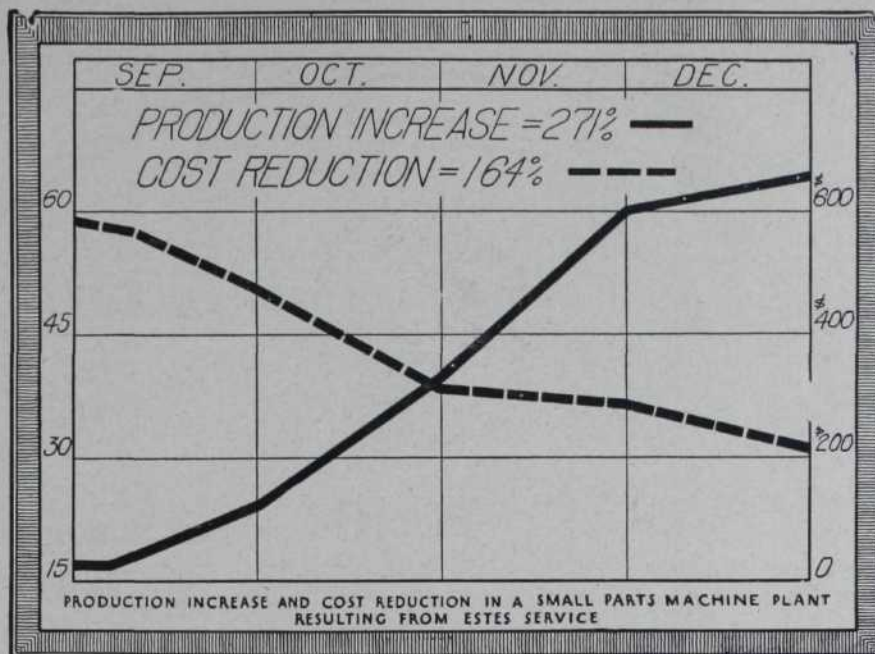


From now on the Weyerhaeuser Forest Products trade-mark will be plainly stamped on their product. You can see it for yourself at the lumber yard or on the job after it is delivered.

When you buy lumber for any purpose, no matter how much or how little, you can look at the mark and know that you are getting a standard article of known merit.

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This question is vital. It affects your business growth—yes, your very business existence. We know that a “buyers market” is fore-runner to lower prices. Lower prices must be based on lower costs.

But it is false economy to curtail needed production in an attempt to cut costs. Such action will likely increase the actual cost per unit.

Through application of Scientific Management, costs can be materially lowered and, at the same time, production can be satisfactorily increased as is shown by the above chart.

Write for Details of the Estes Analysis and Program

If you are interested in knowing exactly where you stand, what your costs are, what they should be, how they compare with others, what savings and profits are within your reach, write for our special bulletin explaining how you can get this information.

ESTES SERVICE in this plant helped to reduce costs per unit from six hundred to two hundred dollars, and increased output per month from seventeen to fifty eight, thus saving at the rate of \$300,000 per year.

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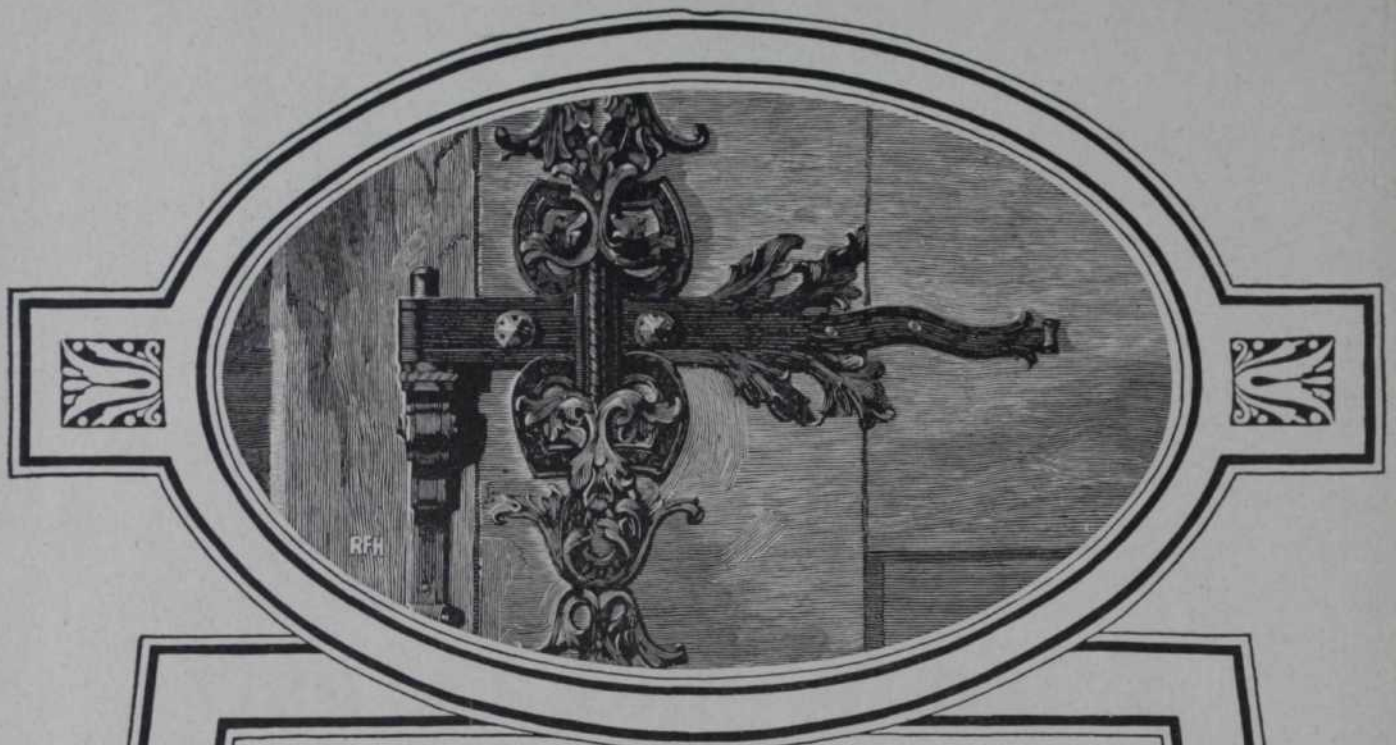
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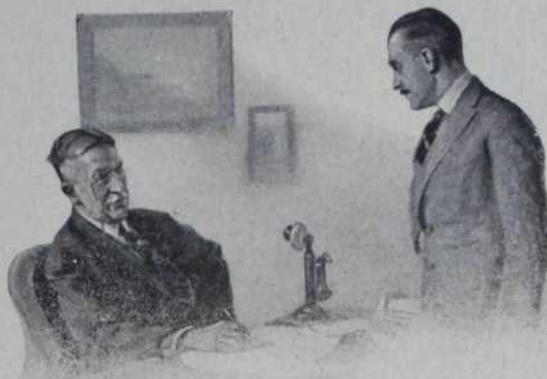


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When a man asks you how to be more successful?



Do you advise him that he must have a keen grasp of the fundamentals that underlie every department of his business—all business?

That he must understand the fundamental requirements of the position ahead of him, and begin actual training for it—if he is to become a true business leader?

Or, do you give him platitudes?

Why not give him specific information—concrete facts?

Men entering business resolve themselves into two types: The "Pay Envelope Man" and the man who looks ahead.

Unfortunately, the Pay Envelope Man is in the majority. But the "Look Ahead" man is well worth your soundest advice. He intends to succeed. You can help him. You can direct him to the *shortest, quickest* road to success.

Tell these "Look Ahead" men with all the earnestness and persuasiveness you possess to enroll in the Alexander Hamilton Institute. If you are a subscriber yourself, then you appreciate what a tremendous help this Course is to any business man—no matter what his position may be.

How to become a better executive

If you are not now a subscriber and are anxious to be a better executive—a better business man—a better leader—it is just a question of time until you will be a subscriber. Probably some of your successful and influential friends have already enthusiastically spoken to you about the Course.

One man, a sales manager of a concern doing an annual business of \$17,000,000, writes us:

"It is easy for me to be enthusiastic about the Modern Business Course and Service. I am a subscriber. I *know* what it is—what it does—how it increases *any* man's efficiency.

"I regard it as business insurance for the future. It is business insurance of the finest kind. It begins paying dividends the very first day you start reading it.

"I know that the Course has helped me. I know that it will help any man in any line of business in any position."

Most men want success—but don't know how to get it

Most men seeking success are sincere enough in their desire—but they don't know the way.

Working blindly, groping in the dark, struggling against *trained thinkers*, is placing a tremendous handicap upon the man who *wants* to succeed but who lacks definite, certain knowledge of the fundamentals that underlie all business.

Greater business knowledge

The Modern business Course and Service of the Alexander Hamilton Institute embraces a comprehensive presentation of the fundamentals of all business. The best thought and experience of thousands of successful business men are brought to you in the most practical, most interesting and easily readable form.

You can absorb this information in your leisure time. You are given a thoro grounding in the principles of such basic business subjects as Finance, Production, Accounting, and Marketing.

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This grounding "insures" your future.

An endowment life policy provides you with a given sum of money at a given time.

Just so surely will the Modern Business Course and Service help you reach the goal you have set for your business success.

It is "business insurance."

The next time you are asked to direct a man to greater business success, refer the inquirer to us. Tell him to get our literature. Let him learn for himself whether or not this Course will help him.

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Name _____ Print here
Business Address _____
Business Position _____

APPOINTMENTS

Employment Dept
Mr. Blacke
Aug. 5, 1920

8:45	New Shipping Clerk
9:00	
9:30	
10:00	Mail
10:30	
10:45	Williams vs Pittsburgh situation
11:00	Reynolds vs Wolff account
11:30	Department heads Conference on Sales Turnover
12:00	
12:30	J. H. Williams
12:45	
1:00	
1:30	LUNCH
2:00	Manufacturers Club
2:30	Talk by C. C. Stoud
3:00	
3:30	
4:00	W. W. Dean (Acme Mills)
4:30	
5:00	Dismissal - 4:30

REMARKS: J. Taylor arrives from Chicago
He will telephone before noon
and come in at 2



"That's Right! I Would Have Forgotten that Appointment!"

DID you ever make an important business engagement for 10:45 o'clock—and remember it at 11:30?

There's one sure way to prevent embarrassing occurrences of this sort—stop trusting to your memory, or to hastily-jotted memoranda, and rely on a simple printed form, like that shown above, to keep you up to schedule in your daily appointments.

This form divides the working day into hourly periods. The time for luncheon is set off by double rules, and there are extra spaces for special appointments before nine and after five.

This form is filled out, as fully as possible, a day in advance—perhaps by you, perhaps by your secretary or stenographer.

Two copies being made, one is slipped under the glass on your desk, and your secretary keeps

the other, so that she can remind you, if she needs to, of an approaching engagement.

This is just one of the many simple printed forms which are being employed, more and more, by progressive business men, to avoid delays, prevent mistakes, and speed up office routine.

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THE NATION'S BUSINESS

A Magazine for Commerce Business Men

VOLUME 8, NUMBER 10

OCTOBER, 1920

The Battle for Substitutes

Industry enters a new era wherein there is a constant struggle between the land and the laboratory whose scientists are conserving and improving our natural resources

By WILLIAMS HAYNES

Publisher of "Drug and Chemical Markets"

IN THESE DAYS of nationally advertised, branded goods, substitution is a nasty word. Just-as-good, so we have been taught, is either a joke or a trick. And yet every manufacturer is today a substitutor; every merchant is selling substitutes which are as good—in many cases even better—than their originals.

Moreover, substitution is not only more and more common: it is also more and more necessary. It is being forced upon us, and in the most sober meaning of the phrase, the future of the human race depends upon deliberate scientific substitution on a scale we can only conceive of today.

You can tell almost the whole story of our material progress in substitutions. To keep out the wind and rain, the cave-man hung boughs in the entrance to the dry cleft in the rocks that was his home. But the boughs withered soon and, even when fresh, were inconvenient to put up and take down while they kept out the elements only partially. The hide of a great elk or a saber-toothed tiger was a great improvement; but it was centuries later, when men had forsaken the natural caves for rude huts, before some genius hit upon the idea of laboriously scraping the hide thin enough to admit light. Thus the first steps of manufacturing—the mechanical treating of a natural product—were taken. Now, we use window glass, sand or silica melted up with various chemicals, and we have the hides, fur and leather left over for uses to which they are better adapted.

The Pejepscot Indians of the New England coast put a codfish in every hill of corn they planted. They thought that it was an offering to the gods that insured a heavy crop. It was really a splendid fertilizer. The high cost of living makes such a fertilizer too expensive today, so the best of the codfish is salted and boxed up to appear, fried into cakes with potatoes, on thousands of breakfast tables. The fish scrap, heads, tails, bones and offal, is still used as fertilizer; but it is eked out, and made a better fertilizer, with other by-products, ammonium sulphate from steel mills

ONE LEGACY of the Great War, for the most part unnoticed, is the extraordinary development of industrial research. The National Council lists 297 American companies which today employ about 7,000 pure scientists, ten times the activity of three years ago. Another concern, not listed, has 1,200, with a yearly budget reaching \$10,000,000.

The recent great chemical merger was an inevitable "consolidation of our gains." Chemists of the nation, meeting this month at Chicago, reviewed their wizardries; and at New York surveyed their handiwork. Well might they gloat over their silent control over your business and mine. What liberties with our factories and our shelves! "Something just as good—and better" is their slogan.

When you, secure in your "independent" business, rebel against novel restrictions imposed by far-flung disconnected industries, indict the scientist. He is the author of the paraphrase "No industry is a law unto itself."

This, and the following article, give a glimpse of the new order into which we are rushing, with some of the novel contacts between industries.—THE EDITOR.

and gas plants, potash from cement factories, and even now with nitrates from the air.

From the fig leaf of Eden to our calicoes and tweeds, our silks and velvets; from the blazing pine knot to the gas jet, the acetylene lamp, the electric bulb, we have come further and further from natural products towards manufactured substitutes. The hide that was once scraped and sun-dried, rubbed with clay and vigorously pounded with sticks or stones, is now cleaned, cured, tanned especially to make it best fitted for a particular use, dyed any desired color, all in a comparative jiffy by sloshing it about in big vats filled with chemicals. Less and less do we depend upon the artisan: more and more upon the chemist.

Now, the chemist is a great saver of time, labor and money; but he is the greatest substitutor on record. He gives us not only chemically tanned leathers, but also artificial leathers by the score, each from its beginning, made to serve its particular purpose as a pocket book, a belt, an automobile seat covering, a handbag, a book binding, or a shoe sole.

The chemist's great success as a substitutor is largely due to his ability to make a wide variety of different things out of a single substance. He puts a chunk of common soft coal into an oven to make coke and sweats out of it a thick, oily, evil-smelling black stuff, coal-tar. By carefully heating this coal-tar he distills off, at different temperatures, a whole series of oils, ranging from white, flammable, volatile benzene to black, viscid pitch.

From these various intermediates, as they are called, he makes a few thousand different chemical substances; carbolic acid, a deadly poison, and salvarsan, a specific for the most deadly disease; T. N. T. and picric acid, high-power explosives, and tarvia and ugite, road building materials to withstand heavy motor traffic; solvents for rubber and water or damp-proofing substances; moth balls and saccharin; briquets for fuel and clay pigeons for target

practice; aspirin and poison gases; developers for photographic films and tanning extracts; disinfectants and cleansing fluids; aromatic chemicals that reproduce perfectly the perfume of all the flowers and the flavors of the fruits; dyes of every shade suitable for coloring cotton, silk, wool, felt, velvet, fur, leather, paper, rubber, feathers, candy, even wood and concrete—all these, and hundreds of others, all from an unpromising lump of common coal.

Every manufacturer, whether he makes automobiles or parlor matches, uses in some way these chemical substitutes made from coal-tar. Every man in business, from the contractor who builds state highways to the proprietor of the corner stationery shop, deals in them. A department store is a veritable museum of coal-tar products. The butter we spread on our daily bread is colored with a harmless coal-tar dye, and our physician cures our colds with coal-tar medicines.

Consider the cottonseed—once a waste product; today it adds nearly \$200,000,000 to the value of the American cotton crop—a smallish seed, it is, with a hard, brown shell covered with a fine down of short cotton fiber,

and a white oily, mealy kernel. From each of these three parts the chemist has made a source of valuable raw materials for a score of different industries. Wherever length of fiber is not essential, he uses the twenty-three pounds of linters removed from a ton of seed for making absorbent cotton and felt and men's hats, for stuffing horse collars, and upholstery, for mixing in shoddy.

He treats them with nitric and sulfuric acids, getting cellulose, after which the chemical child of the cottonseed may enter business as writing paper, enlist in the army as smokeless powder, go out into society in artificial silk; do first aid work as collodion; even break into the movies as films. Not so long ago they used to burn the 800 pounds of hulls under the ginning machine boilers; but now they sell them for \$9.20 (which even today buys a good deal of coal) because the chemist is able to turn them into cattle feed, paper, and fertilizers.

The Oil Goes Everywhere

OUT of 1,200 pounds of kernels are pressed the most valuable product of all, some 300 pounds of crude cottonseed oil. This oil, refined, comes into every American home; the salad oil into the dining room, sardine packing into the pantry, vegetable lard into the kitchen, soaps into the bathroom and laundry, face creams into the boudoir. The lower grades go out into the workaday world in putty, glycerin, paint and varnish, washing powder for textiles and leathers. Even the dry meal, left after the oil is expressed, finds its uses in helping to make beefsteak and grade A milk as cattle food and as flour in cakes and crackers.

So completely do all these chemical children of cottonseed enter into every phase of our manufacturing activities that Dr. Charles H. Herty, when he was professor at the University of North Carolina, based his whole course in industrial chemistry upon this once waste product. So valuable has this once pet nuisance of the ginners become that agricultural experiment stations in their cotton breeding work now conscientiously consider the number and size and oil-content of the seeds, good points of desirable varieties for planting.

It is a sort of chemical step grandchild of the cotton plant which holds all substitution records, for cellulose, which comes from cotton or any vegetable fiber, treated with

nitric acid, mixed with half its weight of camphor, and then pressed hot becomes celluloid. And celluloid is a regular jack-of-all-trades and curiously enough master of most of them. It can be bent, shaved, carved, polished, pressed, stamped, turned, moulded, blown, ground. It is transparent and colorless, but it can be made opaque, or dyed any color; or stained upon the surface, or printed upon. It is a better-than-original substance in a number of different everyday substitutions. As ivory—an ivory that does not crack or turn yellow—it becomes toilet articles, billiard balls, chessmen, piano keys, napkin rings. As horn—a horn of any size or shape, which is not brittle—it makes umbrella handles, whistles, collar buttons. It takes the place of amber in pipe stems; of mother of pearl in knife handles; of glass in automobile curtains, of tortoise shell in combs and eye glasses, of bone in buttons, of leather in pocket books, of cardboard in playing cards, of linen in collars, of shellac in lacquer work, of wood in penholders, of china in dolls' heads, of rubber in electric push buttons, of ebony in brush and mirror backs, of coral, onyx, alabaster, enamel, lapis lazuli, and carnelian in jewelry. It even has its own special private uses in ping pong balls and campaign buttons.

And now, on top of all the substitutions which celluloid makes, the chemist is making the final substitution in making this prince of substitutors out of nitro-cellulose and synthetic camphor.

Our chemists have made this ultimate substitution for the simple, but not obvious reason that the Japanese business man is apt to be the worst speculator in the international markets: "worst" in the double meaning of being at once an inveterate and unskillful speculator. Camphor is the gum of a tree growing in Formosa and Japan, which had long been a natural monopoly of the Japanese. But just as nature abhors a vacuum, so man hates a monopoly—if it is not his own—and the breaking of natural monopolies is one of the chemist's delightful specialties.

In this case his delight was enlivened by the

fact that the Japanese could not resist the temptation to exercise the proverbial prerogative of monopoly holders. A normal price of about 50 cents a pound (which we can be sure affords handsome profits to Japanese farmers, distillers, and traders) has been periodically run up. In 1918 it reached the ruinous height of \$4.75, and naturally the world's largest consumers, the American celluloid manufacturers, began hunting for a substitute. American chemists furnished it, and the substitute is cheaper and has two distinct advantages. It makes a less flammable celluloid without any camphor smell.

And now gum camphor, for centuries a staple article of Oriental trade, has been struck another body-blow by the chemist. As a clothes moth preventive it has long been replaced by naphthelene, a coal-tar product. Only the superstitious believe that camphor is a better cure for influenza than aspirin, another coal-tar chemical. Like the indigo plant, the logwood tree, the cochineal insect, the vanilla bean, camphor gum is losing its natural job to an upstart born of a test tube and a retort.

These battles between the land and the laboratory are vital to each of us. The natural resources of the planet are definite; the scientific resources of man are unlimited. The world's coal supply may be exhausted, but we have not even begun to develop sources of power as yet undiscovered. Already the end of the gasoline supply is measured in years; benzol is coming into increasing use as a motor fuel.

Every year we supplant natural products with artificial products that are cheaper, or stronger, or more plastic, or more lasting, or less dangerous. It is not imitating Nature: it is improving on Nature. Her shortcomings and imperfections can be eliminated by making a perfect and uniform product built up from its very foundations to do a certain work

best. The outcome of this battle of substitutes that improve and conserve natural products is not in doubt, and every new victory means more profit for the business man; more leisure for the worker; better health, more comfort, greater happiness for each one of us.

The Indian put a codfish in every hill of corn as an offering to the gods. He did not know that it was really an excellent fertilizer.



Powder—from Face to Gun

It's a short step from synthetic perfumes to most of our basic industries; American chemists bridge the gap easily, to the dismay of Germans who make false pretenses to a monopoly

By **BURTON T. BUSH**

President, Antoine Chiris Company

AT THE close of the Battle of the Marne I sought out, in one of the big hospitals in France, a friend who had been wounded in the battle. The pretty French nurse, who was my escort, stopped at the end of the corridor before the ward door, tucked in a stray lock of her wavy hair, and powdered her nose. She excused herself and said, "You know I like to look my best before my boys."

"You have given me another example of the close connection between face powder and gun powder," I replied. She seemed to expect some threadbare joke about "deadly weapons" or "facing the powder," and I added: "Didn't you know that the scent in your powder is very closely related chemically to the high explosives that have caused the boys to be sent here?"

On my way out she asked me, and I told her, how the artificial musk in the face powder is prepared from toluene, the same coal-tar chemical from which tri-nitro-toluol, T. N. T., is manufactured.

"That would be a wonderful story to tell my boys when they speak of my perfume. You know," she added quickly, "they are all crazy about nice smells."

After a pause she asked, "Is there any gun powder stuff in rose perfume?"

"Well, there can be," I answered; "one of the chemicals that form a very important part of the perfume of the rose is a chemical called phenyl ethyl alcohol, and this product is made synthetically from a coal-tar chemical called phenol, a chemical from which picric acid is made. Picric acid is the base for the manufacture of the high explosive called melinite, which played such an important part during the first stages of the war."

Synthetic Rose Scent

"BUT a rose does not smell like phenol," she said.

"Quite right, but do you know that if you took the pure synthetically made phenyl ethyl alcohol and compared it with the phenyl ethyl alcohol fractionated from the pure oil of rose, the two chemical bodies would be identical and have the same odor; just the same as the little white crystal that one finds on the vanilla bean. This crystal is called vanillin and it is the active principle of the fine flavor that one gets from the vanilla bean, and yet man by employing chemistry has been able to produce this vanillin synthetically from chemicals, and this synthetic vanillin has the same analysis and is just as pure and just as wholesome as the vanillin from the vanilla beans that grow so prolifically in the Bourbon Islands and Mexico."

"How fortunate," she said, "that my favorite odor is jasmin, the delicate white flower which grows in the south of my country."

I answered, "I agree with you. That is my favorite perfume but still we cannot escape the truth that the boys and men who have

Where Is the Line?

"SINCE I have been able to observe the procedure of congressional committees," writes Mr. Bush, "it has seemed to me that they invariably adopted the rule first to classify imports in two groups, necessities and luxuries. Wool and wheat headed the necessities, and perfumes and cosmetics the luxuries. By the time the committee learned that the same chemicals that made the luxuries were necessary in preparing the necessities, it was time for a general election."

"So closely are the threads of industry interwoven that to pick out those that are necessary or unnecessary is like pulling threads here and there from a fabric and expecting it to be just as strong."

"The chemical industry is a striking example of this. Its maintenance as a whole depends on the importance given to its by-products and their business relatives. To protect coal-tar dyes and not consider synthetic perfumes and flavors is like guarding the rams and ewes and letting the lambs shift for themselves."

left your flower fields in the south of France during the jasmin harvesting time made it necessary that science make up part of the loss of the true jasmin and substitute for it a chemical called benzyl acetate, another derivative from toluol. The perfumer, however, improves this by touching it slightly with another chemical called indol, which while found in the natural jasmin is produced synthetically by the use of chlorine, that deadly gas which has caused so much suffering in the war."

This story emphasizes a point I want to make. That young girl, who for nearly two years had been working like a slave in front-line hospitals, knew a great deal about coal-tar dyes and their connection with both explosives and poison gasses. But, like her, I find that many shrewd, well-informed American business men do not appreciate that there are other branches of the coal-tar chemical industry that are important to them and to the whole nation. From coal-tar, if we have the coal-tar chemical industry, we can get not only dyes of every shade for every manufactured article but also scores of chemicals that are essential to industry. For while it is true that the dye industry is in peace time commercially the most important branch of the coal-tar chemical industry, yet it is by no means the only branch essential to business, and the great industries that supply tanned leather, rubber, perfumes, cosmetics, moving pictures, and medicines are all absolutely dependent upon coal-tar products which are not dyes.

Few housewives would care to keep house without moth balls, carbolic acid, cresol, benzene, roach powder, salol, phenacetin, or aspirin, but few realized how essential these products are and not one in a hun-

dred knew they were all coal-tar products. Like their wives, our manufacturers were using coal-tar products without any fair appreciation of how essential they are, sometimes without remembering they were coal-tar products at all. It took the war to awaken us all to a full realization of the necessity of coal-tar chemicals.

The synthetic aromatic chemicals industry utilizes practically all the primary coal-tar products. Until the war it occupied one of the front seats in the German chemical arena and it was considered absolutely necessary for the maintenance of the German chemical industry as a whole. Every day of our lives we use perfumes and flavors in one form or another and we give the industry so little thought. Soap is a necessity and yet we would not think of using a cake of soap that has not been perfumed or deodorized by some perfume. Today even laundry soaps contain some ingredients that give them a perfume.

Perfume and perfume products have had a place in the world's system of things since man first worshipped and their use has become so great that if it were not for the science we would have ceased long ago to have enjoyed the hygienic and sanitary effects of them, for the trees do not exude enough of the natural gums, and the expense of cultivating the perfume flowers and plants is too great.

Some Pertinent Questions

IF the coal-tar chemical industry is so essential, the question is often asked, Why is it then did we never discover it so until the war shut off German supplies? Why had we never developed a coal-tar industry of our own? Can these products be made of American coal. Are not these all secrets of the German chemists which our American chemists don't know and cannot find out?

In 1913 we exported to Germany thousands of tons of crude coal-tar which Germans made up into finished products, a share of which (some \$15,000,000 worth) we bought back at a handsome manufacturing profit to the Germans. Obviously, there is nothing the matter with American coal as a source of tar, and we had a coal-tar industry that was supplying us with road building, paving and roofing materials, disinfectants, water and damp-proofing compounds, benzene, and other rough coal-tar products. There was a big demand for them, and our coal-tar manufacturers were well contented to turn out these crudes and intermediates by the ton and let the German sell his dyes and medicines and synthetic perfumes by the pound. Ford, with his finished car every minute of the day, is closer to our American ideal than Cellini working two years on a silver salt cellar, and our impatience and craze for big production helped the German chemical trust pay its enormous dividends.

These tempting dividends induced several

American companies to go into the more refined branches of coal-tar industry; but the Germans quickly and quietly cut down this competition. They needed no war to convince them of the importance of a coal-tar chemical industry. They had their dividends. The German Government had for years subsidized the industry and was storing up vast quantities of T. N. T., a dye by-product. Accordingly, the German chemical trust, when an American competitor appeared, cut its fancy prices to the bone; and forced customers to buy all chemicals and dyes from them by refusing to sell any if they did not buy all. Their ruthless methods were made possible by the pitifully inadequate tariff protection our manufacturers had; but somehow the idea got abroad that the Germans were, after all, the only truly successful manufacturers of chemicals and dyes.

If ever there was a clever piece of German propaganda, successfully put over, it was the belief that Germans had a God-given monopoly on all chemistry, scientific and technical. They do not even enjoy a Gott-given monopoly. In fact, they have no monopoly at all, and right in the field of coal-tar chemistry their achievements are pitiful compared to those of Englishmen and Frenchmen. In chemistry, particularly, it is the initial discovery that is most important, for after that any chemist can go on as easily as a boy scout can follow a blazed trail over the mountains.

Coal-tar Chemistry Not German

COAL-TAR itself was first discovered in 1739 by Dr. Clayton, dean of Kildare, and the first successful process for its distillation was patented by the Earl of Dundonald, a nobleman whose title antedates by several centuries the founding of the German Empire. Note now the other Teutonic names among the pioneers: naphthalene was discovered by Garden; benzol, the parent substance of most coal-tar dyes, by Faraday; toluene, by Mansfield; anthracene, by Dumas, and picric acid by Woulfe, who curiously enough was a Londoner. The first coal-tar dye was mauveine, discovered in 1856 by Sir William H. Perkin. The second was fuchsine, discovered by Verquin. The first aniline dye was aniline black, discovered by Lightfoot, and Croissant and Brittoniere, working together, discovered the first sulphur dye. The startling preponderance of Germans among the true pioneers in coal-tar chemistry is in-

Coal that the miner blasts out and brings to the surface furnishes coal tar upon which we have founded a virile industry. Dyes are by no means the only essentials that come from it. Industries that supply tanned leather, rubber, perfumes, moving pictures and medicines depend upon coal-tar products that are not dyes.

deed a splendid tribute to German propaganda!

Fifty or more years ago, when these discoveries were being made, there were no American chemists; but since then they have given us celluloid, carborundum, bakelite, saccharine, antipyrine, and the commercial process for obtaining aluminum, both the soda and the sulphite processes for making wood pulp paper; the manufacture of artificial ice; and hardening of vegetable oils to make cooking compounds.

Since the war, in the face of shortage of supplies of all sorts, our American chemists have reproduced nearly 200 coal-tar dyes never before made here, and, what is more important and more difficult, have perfected processes for their commercial manufacture. They have done the same for some 40 coal-tar medicines, some 52 coal-tar perfumes and flavors and have perfected the most deadly efficient coal-tar poison

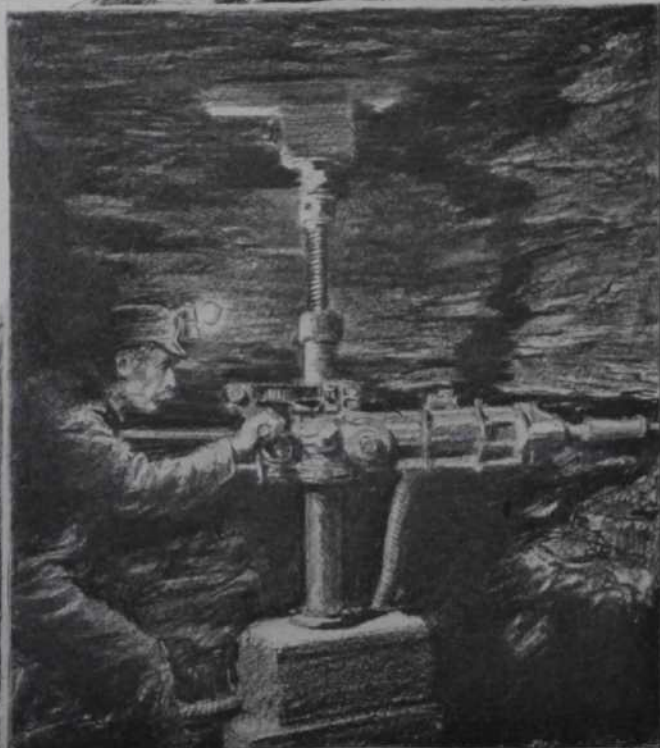
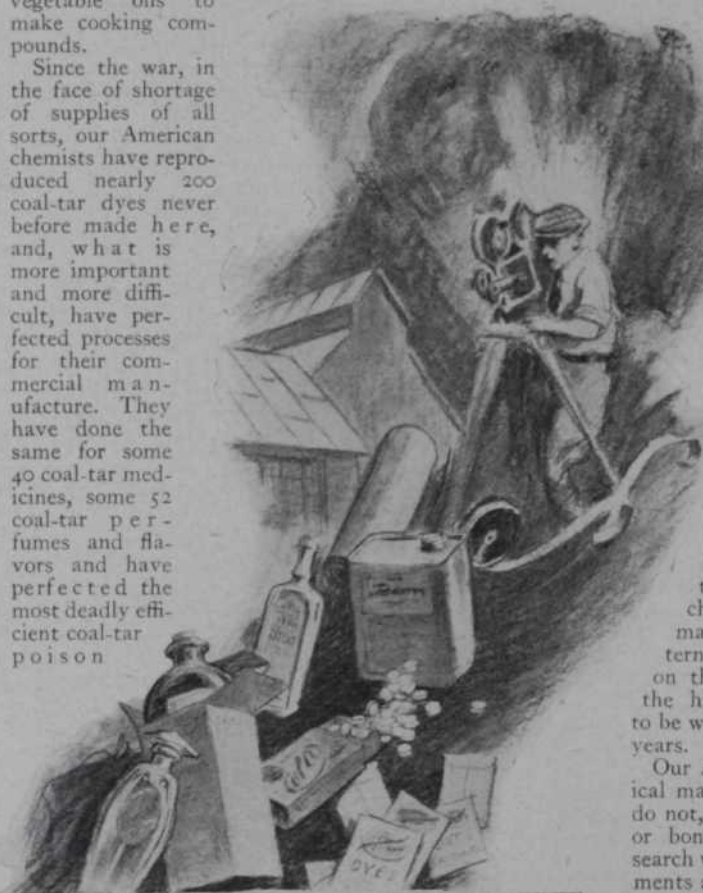
gas. We can trust the American chemist to give us all the coal-tar chemicals we need, and already he has worked out new and improved commercial processes and new uses for by-products.

But we can also trust foreign competitors to give our infant coal-tar chemical industry ruthless, cut-throat, unfair competition. Germany still knows the economic and political value of chemicals that are essential to a score of key industries, to modern medicine, and to modern warfare.

That Germany will make desperate efforts to regain her lost coal tar dominance is as plain as a pike-staff, and it takes very little imagination to guess by what methods she will work to destroy our American manufacturers of coal-tar dyes, aromatics and medicinals. Moreover, England, Switzerland, and France are now convinced of the vital importance of coal-tar chemicals and are working to consolidate the progress their own infant dye and chemical industries have made. The most bitter international trade war, fought on the largest scale and for the highest stakes, is going to be waged during the next ten years.

Our American coal-tar chemical manufacturers cannot, and do not, expect help in subsidies or bonuses or public-paid research work which other governments are going to give to their competitors. They ask, however, adequate protection in tariff and in an embargo against all coal-tar products which are made in the United States in commercial quantities, of standard quality and at a fair price. So much is at stake that such a licensing system is the only means of preventing unfair foreign competition in our domestic markets. England, Switzerland and France have already adopted this means; the United States must adopt it.

But, not less important than government protection for our new key industry, is a sympathetic understanding of the vital importance of this industry on the part of American business men. Every manufacturer of goods who uses coal-tar products in any form, and every jobber and retailer whose profits come from a sale of these goods, must help himself by assuring an American independent source of essential coal-tar chemicals and their derivatives, forever mindful of the importance they play in every American industry.



Who Should Run Our Ships?

Here is the answer by Admiral William S. Benson who, after 47 years of active service in the navy, is devoting himself to strengthening America's new merchant marine

By JAMES B. MORROW

THE CAVALRYMEN of Kilpatrick, young, hard-riding and fierce-fighting veterans, were scouting the country four miles from Macon.

To the north, not far away, two long lines of troops, in parallel columns, were marching and burning, foraging and skirmishing from Atlanta to the sea.

Children, women, old men and negroes were the only inhabitants who remained. Fathers and sons, in rags of gray, gaunt and courageous, were battling with the invaders in Virginia and Tennessee.

Sherman's wagon trains were filled with rations but his program, published to the enemy, was to live on the country as he swept on to Savannah and cut the Confederacy in twain. It became, then, a match of wits, mostly between women and soldiers, to hold and to get.

On the plantation of Richard A. Benson, near the boundary of Macon, cattle were driven into a swamp and smoked meat was buried in the woods. A son, nine years old, helped in those self-defending operations.

That son, William Shepherd Benson, today is chairman of the United States Shipping Board and master of the second largest fleet of merchant ships afloat. Even more than that, he is one of the most accomplished naval officers in the world; nor is the statement just made a pleasantly conventional compliment to him—it is a fact.

On the evening of January 19, 1861, when Richard A. Benson learned that Georgia had passed the ordinance of secession, he lit candles and had them placed in every window of his house. Then he went off to the war and his eldest son soon thereafter did the same. The candles, one for each eight by ten panes of glass, burning in the night, gave to the boy, William S. Benson, his first conscious knowledge of the terrible war that was soon to break upon the South.

Caterer to the Yankee Army

NOT a great while ago Admiral Benson, seated by the side of General James H. Wilson at a banquet in Philadelphia, amiably said: "I remember you, general, more distinctly than you remember me. After you captured Macon, in the spring of 1865, you established your headquarters in the building next to my grandfather's mansion. And there I called on you to get permission to sell milk to your soldiers."

The milk was from the cows that had been hidden in the swamp. "We had milk and butter and some meat in those days," Admiral Benson said to the author of this article, "and bought corn for bread with the money we obtained from General Wilson's men."

War at an end, his slaves free, Richard A. Benson moved to Macon, mainly so that his children might attend school. A college graduate himself, he desired his sons to be educated men.

"Principally, what knowledge I had was obtained in my father's library," Admiral Benson told the writer of these lines. "Such schools as we had were poor. When I was sixteen, I read in our local newspaper that

there was a vacancy at the United States Naval Academy from our district.

"I was ambitious to fill that vacancy. Inasmuch as my father had recently been at war with the United States, I deemed it prudent to consult him. His consent gained, I



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He is the master of the second largest fleet of merchant ships afloat.

applied for the appointment in my own handwriting. There was a competitive examination in Georgia, which I won.

"At Annapolis I was given another examination and failed in mathematics. It would have been mortifying, I felt, to return to Macon, and therefore, I went to Washington and laid my case before our Member of Congress, with the result that I was permitted to take another examination in the fall of the same year, which I passed. And that is the way in which I became a sailor."

After forty-seven years of active service in the Navy, Admiral Benson, by the operation of law, was placed on the retired list in September, 1919. Practically, half of his life as a naval officer was spent at sea. He has been a junior officer on small ships and the captain of dreadnaughts. He has visited nearly every port in the world, has taught at Annapolis and has commanded there and has been stationed at navy yards.

At the time this nation joined in the contest with Germany, he was chief of naval operations—that is to say, he was charged, so reads the law, "with the operation of the fleet" and "with the preparation and readiness of plans for its use in war."

The name of Secretary Daniels was daily signed to many orders to the Navy, both ashore and afloat, at home and abroad, but the orders were written on Admiral Benson's desk. It was Benson who represented the United States in the drawing up of the naval terms of the armistice with Germany and the Central Powers. Afterward he was the naval advisor to the American commission that journeyed to Versailles to negotiate peace.

Admiral Benson can say, for it is true, that never in his career on land or water has he asked for a political favor. He has taken his orders and his honors as they came.

And now in time of peace, on his merits as a student of world conditions and an executive, he has been chosen to restore the American merchant marine, again to unfurl the stars and stripes on every sea and to administer for the United States property valued at hundreds of millions of dollars.

Daily, when not absent from Washington, he sits at a desk in a large room and without ceremony, arrogance or ostentation meets the world as it flows into and out of his presence. The sea routes to every port and from every port are in his mind. The trade facts and idiosyncrasies of every nation he knows and understands. From the bridge of many a warship he has signaled his way into strange harbors and away again.

The great men of this country, or of any country, are plain men at bottom and by habit. It is only the small bean, as every one knows, that rattles in its environment. And the smaller it is, the harder it rattles. In Washington and out of the Navy, when the weather is hot, Admiral Benson wears linen, which fits him and looks as spic-and-span on Saturdays as on Mondays.

Slovens never do great things, except, perhaps, in literature and art, where disorder is often adopted as an advertising agency. Precision and carelessness can not dwell together, but if they could, efficiency would not be the outcome of their relationship. In his person, in his manner and in his office Admiral Benson, always with grace and charm, which means naturalness, is a model, an original pattern, of method, capability and accuracy.

The Man

ONCE his hair was reddish, possibly. Now it is gray, as are his friendly eyes and his close-cut mustache. His nose is of the reflective type, being long and inclined to droop. His stature may be five and ten. At sixty-five, the age he reached on September 25, just passed, he has neither the girth nor the leanness of, let it be said, an elderly man. He is as trim and alert as youth itself, to which must be added the philosophy and

outlook of a long and wonderfully fruitful and thoughtful life.

As a conversationalist, on a topic that he knows, he is fluent but direct, illustrative, persuading and sincere. Never has he demeaned himself by saying: "I am an American through and through." But a more zealous American, a more watchful American, does not live upon this continent. The flag is always over his head. It was over his head during the forty-seven years that he passed in the Navy; it is over his head now in his efforts to reestablish the merchant marine of this nation.

Can he do it? He has the law for it, passed at the last session of Congress, and the ships for it. Without affectation or rhetoric he has solemnly dedicated himself to carry out a great work. "I desire," he told the writer, quietly but intensely, "the American merchant marine to be a success and if I stay here (referring to the civil office he now holds) and God spares my life, I shall do all that is possible to make it a success."

Only Great Britain has a larger fleet of cargo ships than has the United States. On July 1, this year, the Government owned 1,502 merchant vessels, large and small, wood and steel. Since then other ships, under contract at the signing of the armistice, have been completed. About 200 more are being made ready for the sea.

All of these ships must be sold and are being sold on terms to American individuals, partnerships or corporations—all except a limited number of small vessels that are either obsolete or cannot be operated at a

profit under American laws and ownership. This is the task which Admiral Benson and the shipping board now have in hand.

In the meantime, however, the fleet must be operated by the United States. Routes for government-owned ships have been established to northern Europe, southern Europe, Africa, China, Japan, South America, and the West Indies and Caribbean ports. Of the ships being operated at present 615 are from north Atlantic ports (New York, Boston, Philadelphia and so on), 62 from south Atlantic ports, 184 from Gulf ports, 113 from Pacific ports and 63 between foreign ports.

This fine fleet has been built since 1916. It was built, as every one knows, for war purposes—to carry supplies to American troops and to the troops of the Allies. "Ninety-five per cent of the supplies of the American Army, including munitions," Admiral Benson says, "were transported overseas in American bottoms and approximately 45 per cent of the fighting forces of this country went across in American vessels."

Such was the war record of the merchant marine of the United States, which was "whipped into shape," again to quote Admiral Benson, in a marvelously short time. Its peace record is equally fine. During the first six months of this year 15,558 vessels entered and left American ports. Of this

number, 9,550 were owned in the United States. More than 60 per cent of the freight brought into and taken out of this country was carried in American ships.

It was once said by a large body of statesmen and business men that the United States, in ocean transportation, could not compete with foreign nations. The first cost of ships, otherwise the capital invested, on which profits should be earned, made, it was argued, competition out of the question. Also, it was claimed, the expense of operating American ships, on the American basis of wages and living, was so large that it shut this country out of the ocean carrying business, except between its own ports, in which trade foreign vessels were not and still are not permitted to engage.

On this paramount and debatable phase of the shipping question Admiral Benson said: "Vessels owned and operated by the Government of the United States could not hold their own against vessels privately owned and operated by the nationals of other countries. The reason why this would be the case ought to be clear to any one who uses common sense in studying the subject."

"Competition on the oceans now is keen. It will grow more so. The United States, then, more and more must watch its dollars and its minutes and save both at every opportunity. Close management of the most

Heave Ho! Youngsters from farms and cities training for service on our merchant ships. Shipping Board reports show that six of every ten men who now enter service on the government ships are Americans. Also the percentage is increasing. In 1917 the percentage of Americans among men below the grade of officers was 10 per cent. Since then the proportion has risen until now it is 55.7.



expert kind will be necessary and, in fact, is necessary at present.

"The Government can not do anything economically. There are conscientious men in the public service who realize their responsibility and do their duty with no thought of their own interests. But such men are limited in number. I would like to say that they are in control of every division and subdivision of the Government but I cannot do so.

"Now, government is an intangible and invisible organization. It lacks personality, which means that it lacks watchful supervision and driving energy. Human nature is what it is and attributing virtues to it that do not exist fails to change conditions. I deliberately say that the employees of the government, as a rule, are habitually inclined to take things easy.

"Let us consider shipping, for example. The master of a vessel, ready to sail, finds the weather threatening. He and his officers have made good friends ashore. Homes and dinners and pleasant social intercourse await them. So the fog or the wind or the cloud in the sky gives the master of the ship a valid excuse, as he thinks, for spending another day in port.

"I'll wait," he says, "until it clears." He wouldn't use such language, even in a whisper to himself, were he employed by an individual or a corporation. He would sail the minute that his ship was ready and save the owners of the ship a full day's expense and give them a full day's earnings.

"The master of another public ship, let us say, approaching a port that is difficult to enter and not well lighted begins in his mind to argue about his situation. 'Why,' he asks, 'should I stay up all night and worry about getting in?' So he remains outside and sleeps in his cabin.

"I went over to Baltimore, about the middle of August, and found that a 9,000-ton vessel had been tied up in that port since the month of May. 'What does this mean?' I inquired of the official in charge of the shipping.

"I have reported that vessel every day to Washington," he answered.

"Simply in the way of a routine item," I said. "Now," I asked, "what would you have done had that ship been your own property?"

"I would have gone to Washington long ago," he replied, "and seen about it in person."

"Hereafter," I told him, "just look upon every United States cargo vessel that comes into Baltimore as belonging to yourself and

if you don't hear from Washington promptly declare war on the government and I'll help you."

"There is no use of going any further into the particular matter that we are talking about," Admiral Benson continued. "There are a hundred reasons why the government can't efficiently conduct a business like shipping. You asked me also if American cargo ships, owned privately, could compete with the vessels of other nations. My answer is that they can.

"I have traveled all over the world. I know the ports and the peoples of Europe and Asia. This I say modestly. With the knowledge that I have, I assert that American vessels, owned privately, that is by individuals and companies, can compete successfully with the vessels of any other country.

Why We Can Compete

WE have in iron and steel, harvesting machinery, petroleum and so on built up great industries. This we have done because the American people have ideas and are resourceful, daring and plucky. What we have done in one direction we can do in another direction.

"I have carefully and thoughtfully gone into the shipping question, taking into account everything that is of advantage to us and everything that is of disadvantage to us and am positive that we can hold our own at sea. The American flag is now found in almost every port. It is up. Our people, I feel sure, will never consent to have it pulled down.

"Psychology—I would use another word if there were a better one—then favors those of us who desire to see American merchant ships, owned privately, sailing into every corner of the globe. Our pride as a people has been aroused and we have the brains, the enthusiasm, the courage and the stamina to make our pride a concrete reality.

"I call, therefore, on our editors and writers to sink all small differences of opinion as to means and methods and constantly to keep the main question in the foreground. It is proper for any editor to say that Benson is not the man for the place he holds but it is unpatriotic, I insist, to hinder the development of an American merchant marine by quibbles and faultfindings that tend to cast doubt on a great and popular idea.

"Congress has declared 'that it is necessary for the national defense and for the proper growth of its foreign and domestic commerce that the United States shall have a merchant marine of the best equipped and most suitable types of vessels sufficient to carry the greater portion of its commerce and serve as a naval or military auxiliary in time of war or national emergency.'

"This declaration has become a national policy. The United States is to have a great fleet of merchant ships, privately owned, which is to take our exports abroad and bring in our imports; and Congress has pledged the government 'to do whatever may be necessary to develop and encourage the maintenance of such a merchant marine.'

"All Americans then, should pull together in making effective the policy of their country. It is not a party policy but a national policy and I know of none that is of more practical importance. We must have control of ships if we hope to have a hand in the control of trade.

"Long ago American vessels were the finest and the fastest afloat. England sent marine architects to this country that they might study our methods and designs. While the vessels of other nations were pulling at their anchors and waiting for cargoes, our ships were sailing with freights and passengers on every sea.

"I want those old and honorable and profitable days to return. And they can return. I am sure they can return."

Checking Cancellation Evils

Inquiry by the National Chamber of Commerce shows that post-war chaos was the chief cause; there is no general disposition to evade the contract to buy

IN ITS SURVEY of the manufacturing field to try to determine the cause and effect of unjust cancellation of orders, the Fabricated Production Department of the Chamber of Commerce of the United States reports that the percentage of cancellations based upon the failure of business men to recognize the sacredness of a contract was comparatively small. The investigation revealed that most cancellations are largely due, directly or indirectly, to chaotic conditions arising from war times.

While it is true that the majority of business men scrupulously adhere to their obligations and look upon an order as a binding contract, there is a danger, the report declares, that unless a definite stand is taken against any tendency to regard cancellations as unimportant, this evil may assume serious proportions.

The investigation was made in response to complaints from business men all over the country that production was being interfered with, plants having shut down even though production is below normal and stocks in the hands of wholesalers and retailers are light. Several of these complaints protested that

contracts of sale were being utterly disregarded, and that the buyer was willing to chance a suit at law.

E. W. McCullough, head of the Fabricated Production Department, in his study of cancellations went deeply in the subject. He considered the matter from two aspects:

First, cancellations made for good and sufficient reasons and which should be accepted in the best interest of both parties.

Second, cancellations, which, while working a hardship on the seller should be accepted as indicating good business discretion. Under this heading were listed orders for seasonable goods bought in larger quantities than usual which were cancelled because of unfavorable seasonable conditions at time of shipment. This test applied to certain lines of clothing, women's wear, and farm machinery.

In his investigation, Mr. McCullough also took into consideration that there is a moral obligation on the manufacturer and supplier of merchandise, although not a legal one, to deal with his customers on lines that will promote his and their best interests. The investigation sought to learn to what extent current cancellations are based on reasonable

grounds and how often the buyer or seller is taking an unfair advantage of circumstances.

Inquiry was sent to 106 leading trade associations, requesting them to report on certain questions. Some of the questions asked were:

Is your industry being affected at this time by the so-called cancellation evil and to what extent?

State most common reason given for cancellation. Has, or will your association take any action in this matter? State what.

If your members accept cancellations, under what conditions?

Have your members in times of large production in securing orders, inserted cancellation clauses in order or contract?

Would you cooperate in a general effort to reduce the number of cancellations by proper methods?

According to the replies, the responsibility for many cancellations was chargeable in part to the seller as well as to the buyer. Some of the chief reasons for cancellations are as follows:—inability to make prompt delivery; over stock; business declining; revision of production schedule; financial embarrassment. Some replies indicated also that the public will not buy at present prices.

The survey developed that several organizations have created a bureau of contracts to deal with all claims for cancellation of orders. These bureaus act simply in an advisory way, receiving from the complainant a statement of facts as a basis for investigation, in due time rendering an advisory report, and in some cases endeavoring to secure a settlement if desired.

Final analysis of the investigation made it plain that almost every phase of business is affected by this problem.

Here are some pertinent facts with regard to cancellations in various industries:

PAPER.—There has been a tendency to pyramid orders predicated on low production, these orders later being cancelled after deliveries began to improve. Again there has been considerable cancelling where prices decline, working considerable injury to the manufacturer who has been reluctant to stand on his legal rights. There is a disposition in this industry to create a bureau to curb this evil in some equitable way.

LUMBER.—In one division of the industry the cancellations amounted to 77,000,000 feet since January, or over 3,500 cars. These cancellations were largely by buyers and without any reason which would be valid in law. There were, of course, a number of cancellations because of inability to secure cars. No doubt there were also many instances where cancellations were predicated on decline of prices.

MACHINERY PARTS.—Most of the work is done on special order under an agreement

which protects the contractor from loss in case of cancellation.

BUILDING LINES.—Cancellations are uncommon except where for financial or similar reasons the project is abandoned.

CLOTHING.—Many cancellations based on fear that the public will not buy, induced by the general publicity attacking present prices.

WOMEN'S WEAR.—Only a moderate number of cancellations and an effort is being made to educate the trade against repudiation of orders.

MACHINE TOOLS.—Cancellations due largely to inability of manufacturer to produce in time to meet requirements.

PRESSED METAL TRADES.—Cancellations largely on account of manufacturers using these products revising their manufacturing schedules, particularly the automobile makers. Most contracts are so drawn that the buyer must pay damages in case of cancellations, owing to the fact that most of their product is made to special patterns or designs.

FURNITURE.—During the period of low production the demand increased rapidly leading to over-buying and later, due to restrictions on building and housing conditions, there came a reaction in demand and a consequent cancelling of orders, particularly from those who had over-bought. The industry contemplates taking steps, either through placing certain restrictions on orders and contracts or by an educational process to secure more equitable treatment for the manufacturer who at present carries the burden.

SILKS.—An unusual number of cancellations

are reported, due to conditions in this line that have been given considerable publicity. The representative organization of the silk men has a bureau which adjudicates all claims for cancellation, with due regard to both parties to the contract.

HOSIERY AND UNDERWEAR.—The cancellations in this line have been considerable, the buyers apparently taking advantage of the manner in which orders are given and accepted. Steps will be taken to make these orders in future definite contracts, so that they will be more seriously considered.

Cancellations are not confined to this country as is indicated by a report from Nottingham, England, that British lace and hosiery manufacturers and exporters have become concerned over the large number of orders cancelled by foreign firms. The Nottingham Lace Exporters' Association recently decided that no member of the association should hereafter accept any cancellation of orders without the special permission of a committee appointed for the purpose of investigation.

This means, according to Consul Calvin M. Hitch, that should a customer decline to accept goods, after having placed an order, he will not be permitted to purchase goods from any other member of the association until he has complied with his contracts. The hosiery trade is considering similar action.

There is no disposition here to imitate these English methods but it is believed that the time is opportune to emphasize and stabilize trade ethics which make for fundamental soundness in business.

Servants—Public and Otherwise

We are easily convinced that the housemaid needs higher pay with which to buy necessities but when a public service corporation makes the same argument—!!

By GUY MORRISON WALKER

IT IS almost impossible to get a good servant these days.

"Yes, and when you get one it is necessary to pay three times as much as before the war."

"Well, I would be perfectly willing to pay the price if I only could get a good one."

How often one hears a conversation like this. It expresses the almost universal recognition of a condition known to exist and the general readiness to pay almost any price for service.

Our ideas of good service have changed much with the passing years. We no longer scatter dust with the broom; we attach a vacuum cleaner to an electric light fixture. We no longer in the city carry in coal to the kitchen range; we turn on the gas. We can not imagine ourselves going back to the coal range, the smoking oil lamp and the well in the back yard.

Our household servants have an easy time these days, yet we willingly pay them three times the price we paid when their work was three times harder.

It is a strange quirk of the human mind that makes us willing to pay more for human domestic service and at the same time oppose violently higher payment for our mechanical servants. Over there in the corner of the kitchen is the gas range, working at the same old wages. We recognize that the housemaid has to have higher wages to purchase the things she needs and at the same time refuse to recognize that the cost of living for the company that produces the gas has gone up



just as much under the same economic conditions.

I was surprised recently to discover how much my monthly bills for gasoline had increased in recent years. Now, I can get along without my automobile, but the gas range in my kitchen is a necessity. We pay the price for the things we do not need and kick on a

living wage for those that give us the thing we need to sustain life itself.

Some years ago, in a little pamphlet entitled "What Shall We Buy?" I called attention to the position of public utilities in our social economy: "To the extent to which the use of their facilities is imperative (that is, a service without which the people cannot get along), to that extent is the sum necessary for their support a tax upon the people, a tax even more impossible to escape than those imposed by cities and states, because the laws by which they are levied and collected are natural instead of human."

Paying three times as much for one servant, how can one expect to ride down town for 5 cents when the street car company is paying its men 60 or 65 cents an hour instead of 20 or 25 cents as when the 5 cent fare was fixed? What right has one to get gas at the old rate when coal and oil are costing from four to eight times as much?

It cannot be done and the attempt to do so is starving our public servants to death.

One real trouble is that our public utility operators are such creatures of routine. They do not know what the economic laws of public service are and they really seem to believe that these economic laws are in suspension if they have not entirely ceased to exist or operate. The salvation of the public utility business is to lay down hard these economic laws and force the communities to realize that they are in constant operation. Public

utilities owners and operators have been afraid to let the laws operate. While submitting themselves to the law of demand they have been afraid to pass it on to the people whom they serve.

The plight of the public utility companies is largely due to their fear to take the steps which they have a right to take for their own protection. The courts here have almost uniformly held that where public service commissions or other commissions interfere in the matter of management or rates they are bound by equity rules and cannot either fix or impose rates that will bankrupt companies. The chief trouble has been that the owners and managers of public utilities have known so little of their rights they have not known how to move, or if knowing they have been afraid to act according to their legal and ethical rights.

One of the handicaps in the public utility business is that the original franchises were sought by and granted to promoters who had little or no knowledge of the operating conditions of such public utilities. These men accepted franchises that contained many foolish if not impossible conditions. Such franchises ought never to have been accepted, but it was usual in those days to accept any kind of a franchise and then ignore the unworkable conditions and provisions. Much of the bad feeling in connection with public utility business has been due to this.

They'd Accept Anything

IT was wrong for the constructors of public utility properties to accept franchises containing uneconomic and foolish provisions. The public generally has ignored the fact that franchises contain many uneconomic things and when public utility companies find it impossible to comply with the terms of franchises, it has left the way open for the demagogues to charge public utility companies with bad faith. My own experience has been that it is unnecessary to accept any such franchises and I have seen bankruptcy after bankruptcy follow after those who did.

People overlook the fact that a franchise is nothing but a license or permission to render service. If the service is paid for it may or may not be of value, but there is no obligation on anyone to render service at less than cost, or at a loss. It is neither ethical nor logical to expect that service will be rendered at a loss and no one is able to compel it. A franchise is absolutely worthless unless it gives a right to render service at some price above cost. There is, therefore, nothing to be feared in boldly junking or ignoring a franchise which is no longer an asset but a liability. All that you need is to exercise a little common sense and show this to the people.

Public utility companies should call the attention of the people to present conditions and I have no doubt the people will respond, for there is no population that does not know that the reputation of its city is better for having a public utility in it that has been and is a conspicuous financial success than to have it added to the list of cities in which the public utilities have failed and gone through bankruptcy on account of short-sighted antagonism.

If the people of any given community give the public utility properties fair treatment and permit them to be successful it is a good advertisement for their city and makes it possible to raise additional capital for improving or expanding service therein. If, on the other hand, the public attitude toward public utilities drives them into bankruptcy it not only deprives the people of that city

of the service they have been getting, but makes it impossible to raise capital to furnish the service that has been destroyed by unjust treatment. The people have not

The Municipal Black Eye

ALL OVER the land, public utility companies are calling for help. Mr. Walker, in stating their case, lays stress upon the public utility as a civic need. The bankrupt street car line is a black eye for a town. The way out lies in fair play dealing in the open and refusing to attempt the impossible.

The plight of the gas companies is in point. Operating under franchises conceived in a day when gas was chiefly an illuminant and the gas mantel unknown, they find themselves now called upon to face new problems under old restrictions. Gas oil, needed to produce gas that meets the lighting test which still survives in some communities, is not only high out of proportion to other supplies, but difficult to buy and needed by other industries. Wherein lies the solution? Partly in making plain to the public that the gas company's needs are its needs; that the public must do its share if a utility is to be a public servant in the fullest sense of the word.

Typical is the case in Philadelphia, where the gas company, facing a deficit at the present rate, has asked the mayor to "secure the services of capable and impartial experts to study thoroughly the situation and to recommend such readjustments as may seem wise and fair under existing conditions."

Mr. Walker is unusually well equipped to handle this subject. He reorganized the Detroit and Toledo Shore Line Railway Company, the Columbus, Delaware and Marion Railway Company, the Pittsburgh Railway and Light Company; was chairman of the Knickerbocker Trust Company Reorganization Committee, and is now president of the Laurel Light and Railway Company and the McComb and Magnolia Light and Railway Company. He is the author of "Measure of Civilization" and "Railroad Rates and Rebates."

—THE EDITOR.

realized before that it is this very harsh treatment that is now making it difficult, if not impossible, to raise capital to take care of their demands for increasing service.

The trouble with most cities and towns is that they fail to realize this. If by impositions you bankrupt a public utility your people are compelled sooner or later to tax themselves to make up the deficit between what the service they have received has cost and what they have paid for it.

In a case which I am now handling a

property was forced into receivership by regulation and imposition. It was operated by the receiver at continuing deficits because he was unwilling to attempt to raise the rates to a point where the income would pay for the service, but now the court has ordered the service discontinued and the property junked. The people who have relied on this public utility for service now find themselves compelled to secure a large sum of money in the shape of a subsidy or bonus to prevent this property from being junked. The sum they are now required to pay is really nothing but a lump sum, the difference between the cost of the service they have received and what they have been paying for it.

In the case of the Connecticut Shore Line Railroad the people could not see the economics of this and refused to pay the deficits. The result is that the property has been junked, the rails taken up and sold, the power house dismantled, the cars gone, and not only is the community formerly serviced by this sixty-odd miles of railroad now deprived of the service, but the values of the property along the line have been lost.

The people now find that it is impossible for them to regain these values except by voluntarily assessing themselves a sum ten times greater than they would have had to pay if they had only paid what the service had cost when the road was there.

Two years ago the motormen and conductors on a street railway property that I control, in a city famous for its lumber industry, ran the cars into the barn and quit work. That evening they published in the city paper a card to the public substantially as follows: "We have not asked the light and railway company for an increase in wages for we know that at the present rates they cannot afford to pay it. You people who work in the mills are getting three times as much wages as you got a year ago. You cannot ask us to furnish you street railway service at our old wages when we can quit our railway jobs and go to the mills and get the same wages that you are now getting. This is what we are going to do unless you want street railway service bad enough to agree to increase the rates to the light and railway company in a sufficient amount so that it can pay us as much wages for furnishing you street car service as we can get by going into the mills and working with you."

A Popular Increase

NEEDLESS to tell, such a card as this caused excitement throughout the city. Mill men, storekeepers, laborers and everybody stormed the city hall and demanded that the rates be raised whatever amount that might be necessary to enable the light and railway company to pay the street car men as much wages as they could get if they went to work in the mills. The city authorities thought this a splendid opportunity to make a public demonstration and so they refused to act on their own responsibility, but called a special election on five days' notice, and it seems as if everybody in the city hustled to get out the vote, for the increased rates were carried in a popular election by a vote of three to one.

The owners and operators of public utility properties should take advantage of the present situation to show the people how by foolish regulation and the imposition of extraordinary and unfair taxes and of burdensome conditions they have simply been taxing themselves, for they now find themselves compelled to pay rates extraordinarily higher than were the previous rates in order to cover all these impositions that they themselves have piled onto the public utility companies.

To Link All Power in One

A yearly saving of \$300,000,000 and 30,000,000 tons of coal is the promise of government engineers who are making the survey of power and needs in the eastern states

By J. W. BISHOP

PICTURE a great power transmission line stretched on steel towers from Boston to Washington. Into it flows current from stations at tidewater, at the mouth of the mines and from hydro-electric plants wherever water power warrants. From it run feeder lines supplying Boston, New York, Philadelphia, Baltimore, Washington and the hundreds of smaller industrial centers that lie between.

There you have the backbone and ribs of the super-power system which is the vision of the engineers and government scientists who are at work on the survey of the North Atlantic industrial region lying between Boston and Washington and running inland 100 to 150 miles. These 50,000 square miles form the nation's busiest industrial section, the finishing shop of our industry.

These men, who are looking ahead, would take from the trunk lines of the great railroads of the district their coal burning locomotives and half the coal cars that now clog the rails.

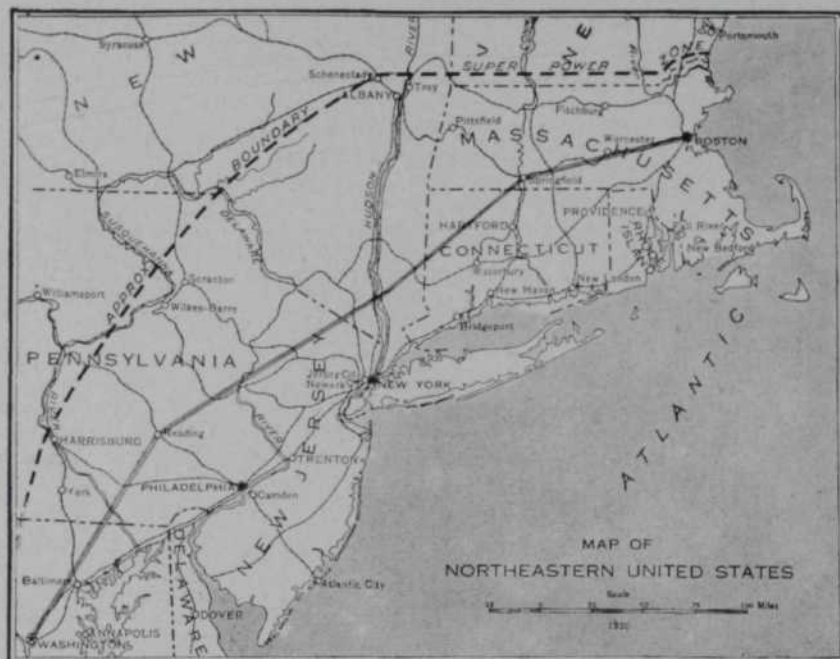
If you listen to Dr. George Otis Smith, director of the United States Geological Survey, you get a vision of 30,000,000 tons of coal a year saved for future generations, and that means the labor of 30,000 coal miners turned to some better use and 40,000 train loads of coal kept off our eastern roads.

The Economy of It

IF your pocketbook nerve is tingling at the thought of the bill to be paid, and it is no small one, calm it with the figures of the savings that will come. The lowest estimate is a matter of \$300,000,000 a year, a return of 24 per cent on the estimated cost of a billion and a quarter.

And all this is not a dream. The plan is under way. The first big step was taken this year when Congress, having been asked for \$250,000, appropriated \$125,000 for "the special investigation of the possible economy of fuel, labor and materials resulting from the use in the Boston-Washington industrial region of a comprehensive system for the generation and distribution of electricity to transportation lines and industries."

But that is not all, for the same clause in the appropriation bill authorizes the Secretary of the Interior to receive any contributions for the same purpose and to add them to the appropriation. Thus, business and the government are going into partnership in



The super-power survey is covering the district within the dotted line and the Atlantic ocean. The three parallel lines running from Boston to Washington are the main transmission cables that will receive the power generated at mines and water falls and distribute it to industrial centers. The route they will follow is not yet certain; that shown on the map is one that has been suggested by Dr. Smith.

this enterprise. If the government's \$125,000 isn't enough to carry on the survey and lay the plans—and it will not be—then business can add its share and the work go ahead still under Federal supervision and as a national, not a private, project. And there's no worry about money. What the engineers want from the government is chiefly its approval.

The plan has been taking shape for a long time. Before the war there was talk of the operation of roads on the west side of the Hudson river by a general power and equipment company. The war checked that, but it taught us how little added pressure our eastern railroads and industries could stand; how near they had come to what a chemist might call the point of saturation. We learned, too, in the winter of 1917-1918, how near we might come to an actual coal famine.

One of the most earnest workers for the plan has been and is William S. Murray, who had charge of the electrification of the New York division of the New Haven railroad and who has been preaching "salvation through super-power" to engineers, to business men and to congressional committees. His text has been:

"Power in the form of coal is maximum in bulk and minimum in efficiency; in the form of electricity the exact reverse occurs."

We are wasting coal by the millions of tons a year, wasting labor in digging it, wasting more coal and more labor in lugging it long distances. And we waste again in our individual plants where two, three, and

even four tons of coal are used to do the work of a single ton at the central station.

Prof. Malcolm MacLaren, of Princeton, gave a graphic illustration of coal waste at a recent convention of the American Institute of Electrical Engineers. He cited the report of the Bureau of Mines for Pennsylvania, which shows that for a total annual production of 80,000,000 tons of anthracite more than 8,000,000 tons were used in the mine operations.

"Data obtained from the electrified mines of the district," said Prof. MacLaren, "indicate that if all the mines were electrically operated from a central supply system this 8,000,000 tons would be capable of supplying all the needs of the coal companies and have a balance sufficient to operate a generating system of over 600,000 kw. capacity at 50 per cent load factor, or approximately the entire power load of Greater New York, including the railways."

How It Worked on a Smaller Scale

A LIKE story of waste of power is told of the mines of Logan County, W. Va., where some 4,000 horse-power were being developed in various plants for operation of the mines. Some bright man built a central station to supply electricity to the same mines and found that all they needed was about 500 horse-power. Some seven-eighths of the energy was wasted.

The super-power folks are trying to do for the North Atlantic industrial region just what the engineer did for Logan County, but instead of dealing with 4,000 horse-power they are dealing with 17,000,000. Of that figure 10,000,000 is industrial and 7,000,000 railroad.

The engineers in charge of the work and Director Smith agree as a modest, in fact, a minimum estimate, that the coal saving will be 30,000,000 tons at \$5 a ton. There you have half of the \$300,000,000 annual saving. They figure that at least another \$150,000,000 will be saved by cutting off the cost of steam maintenance. One big saving which will be effected by electric locomotives is that they can handle much larger loads and thus greatly reduce the number of train miles and handle the traffic at twice the speed. On the New Haven railroad the electric locomotives have 4,000 tons where 1,200 was the old steam engine figure.

Howard Elliott, when he was president of

the Northern Pacific, once put the need of railroad electrification in terms of firemen. In effect, he said, "We can't run bigger trains because we can't build bigger engines and we can't build bigger engines because we can't find bigger firemen."

A like problem was that of the Norfolk & Western which electrified a part of its line, not because of need of coal, for it was carrying coal, nor with any desire to mitigate a smoke and noise nuisance, but simply because it couldn't handle trains fast enough unless it rebuilt its road or electrified.

That's one factor in the railroad saving. Another is the cutting in two of the 60,000,000 or more tons of coal that the railroads in the district now have to haul. Coal traffic is 40 per cent of the railroad haulage in this district and much of the year coal is fighting with the other necessities of life for cargo space on these roads.

The Falls Will Work Too

WE are reminded at this point of the gentlemen who year in and year out have been telling us that if we only used our water-power as we ought to we could look with less worry at our dwindling coal supplies. That is a point which the super-power workers do not overlook. They would use all available water-power, but at the bottom of it all lies this fact: comparatively speaking, the district involved has no water-power. In the United States as a whole 70 per cent of our water-power lies west of the Mississippi River, while 70 per cent of the stationary horse-power in use in this country lies east of it. And the problem grows more and more one of coal as the field of inquiry is narrowed to that North Atlantic field where one-sixtieth of the area of the United States uses one-fourth of the industrial horse-power.

It is doubtful if water-power fully developed would supply 8 per cent of the needed energy, and yet the rivers are not being overlooked by these wide-visioned planners. Philip Torchio, chief electrical engineer of the New York Edison Company, tosses off power figures like a baseball lunatic talking batting averages. He pleads for the use of our water-power where there is a steady, continuous flow in those industries which need it twenty-four hours a day every day in the year. He would save the strength of Niagara for such industries as the making of aluminum, carborundum, special steel and such chemicals as caustic soda and nitrate.

But such rivers as the Susquehanna and the Delaware and the smaller water-powers of the region will be drawn on and in such a way that waste will be at a minimum. They will be supplemented by steam-electric plants to even the supply. The whole great system will furnish a reservoir for surplus power. As one enthusiast says, "It is like a great pool in which every kilowatt-hour of the river can be used to replace the coal that would have been burned."

There is one source of water-power under consideration as an integral part of the system—that is on the St. Lawrence river at Cedar Rapids. Percy Thomas, an electrical engineer, has sketched a plan for a main power line extending from Lowell and Lawrence, a little

north of Boston, to run along the coast through Providence, New Haven and New York to Washington by way of Philadelphia and Baltimore. He suggests three chief tap-lines, one of 150 miles from the hard coal field to New York, another from the soft coal field to Philadelphia, about the same distance, and a third of 250 miles stretching up the St. Lawrence and meeting the main line where it crosses the Hudson.

The engineers point out one thing when they talk of going further afield in the search for power. Hendrik Hudson may not have realized it, but New York seems foreordained as a power center. Draw a circle with New

those figures would be multiplied by three if the power came from this great central system.

As for engineering problems, the experts simply say that none exists that can't be overcome. All that is needed is to do what already has been done but on a larger scale. Is it too great a distance? There's a trunk power line in the west from Tonopah, Nevada, to Yuma, Arizona, which is about as far as from Boston to Norfolk, Va.

The "generating element"? It involves nothing new or untried, is the answer of the specialist. Insulators? "If you care to build such a transmission line we can guarantee the insulation with a perfectly tried unit." And so it goes, electric locomotives, steam turbines, all things needful have been made or can be made.

The question of money is not worrying the men who are urging the super-power project. They say that a saving of \$300,000,000 a year by an investment of \$1,000,000,000 is too big a thing not to interest capital. The securities might be taken by individuals or they might be guaranteed by the states or the Federal Government.

The figure of \$300,000,000 yearly leaves out of consideration many things. The question of coal by-products brings out a new picture of savings. Suppose the coal burned at these central plants were burned as coke. What of the 10,000 cubic feet of gas, the 22 pounds of ammonium sulphate, the 2½ gallons of benzol and the 9 gallons of tar each ton contains in addition to the coke? It used to be said that there were \$14 worth of these by-products in each ton of coal worth \$1 at the pit mouth.

But it is not with the question of financing that the super-power folks are just now concerned.

They've got the Government enlisted and they're going ahead with the field work. The advisory board is made up of representatives of the railroads, the electrical railways, the electro-chemical industries, and others vitally concerned. In the field is an engineering staff headed by Mr. Murray and made up of two representatives of the Government, one from the Geological Survey and the other from the Bureau of Mines, and of three division engineers representing railroads, industries and power and transportation.

A Young Industrial Miracle

THE men of the field staff are still in the prime of life, yet they had part in the very early development of the power possibilities of electricity. Cary T. Hutchinson, head of the first-named division, worked with Frank J. Sprague on the design of the first electric locomotive built in the United States. One associate, L. E. Imlay, who is in charge of power and transmission, put into operation the first 11,000-volt transmission plant in the United States. And now these super-power men talk of 250,000-volt transmission. The third of the trio, Henry W. Butler, helped to develop the great plants of the Interborough Rapid Transit Company.

The plan these men are at work on will send power from the same source into the housewife's washing machine, carry her husband on his travels, and light him home at night.

Power Multiplication

THE SUPER-POWER survey is under way. This project in reconstruction has the approval of Congress, the endorsement of the engineering profession, and the backing of large business interests. The engineering staff includes men who have already done pioneer creative work in applying electricity to the use of man; the advisory board includes men of vision and experience. Public confidence in the project is warranted, and the report, to be completed June 30, 1921, will command the nation's acceptance.

The nation's business demands greater production and better transportation. Electrification is the answer: with machinery we can multiply human energy; with electric locomotives we can double, treble, or even quadruple the carrying power of our railroads. Incidentally, substituting a great super-power system for independent small power units means saving coal; and high prices have taught us that we can no longer afford to waste coal—each ton must do its full duty for America.

I believe the super-power plan is a long step forward in national economy.

GEORGE OTIS SMITH,

Director, United States Geological Survey.

York as center and its radius hits three great power sources—the St. Lawrence, Niagara and the Clearfield soft coal regions.

What do the railroads and the other lines of industry think of all this? What of the tons of valuable machinery that must be scrapped, of the locomotives that must go to the junk heap, of the plants that must be remodelled? The answer is that nothing of the sort will happen. The locomotives won't go to the junk heap. There's a use for every one that is released. And the railroads that find their coal traffic cut down will find other and more profitable business. As for individual concerns the answer is equally simple. As a whole, in this district manufacturers are working to their full capacity of their present installations, they are reaching out for more power and that added power will come from this great central source and gradually old plants will disappear.

The great public utility plants of our big cities would not disappear. They would simply be merged into a bigger and a more economical plan. To show how much more economical this making things bigger can be, take an instance from the books of the New Haven railroad. After the New York division was electrified, tests were made of steam and electric engines. A steam switching engine burned four times the amount of coal, a freight engine two and one-half and a passenger engine twice as much. And

Slave Labor in Free Russia

Instead of the lazy paradise that the worker expected from seizing and nationalizing industry, he has brought industrial ruin upon his country and compulsory labor upon himself

By JOYCE O'HARA

RUSSIA, hailed as the country where the worker was to be really free, has come to what is practically slavery. With the downfall of Russian industry which began with the idyllic days of "workers' control" of factories, has come an insistence on the rule that all human effort is the property of the state. These are conditions disclosed by the preliminary study of labor conditions in Soviet Russia made by the International Labor Office of the League of Nations.

At the outset, Lenine and Trotsky said to the workers in effect: "You do the work. Without you there would be no production. Therefore the factories are yours. Take them and run them. Sell what you produce and keep the money. Goodbye, good luck and God bless you."

Simple enough, when one comes to think of it. The great trouble with it is that it didn't seem to work. Workers' control and nationalization meant just one thing to the workers, and that was possession of the factory by the workers. Chaos followed and everywhere there were conflicts.

Sevputhoff, director of Textile Industries, is quoted as saying: "The workmen... were unable to understand anything except that the revolution gave them the right to do as they pleased. The output went down to 40 per cent and chaos in government ensued."

Arsky, a well-known Bolshevik, in an article entitled "The Pillage of Factories," complains that "the mill workers carry away with them the machines and machine parts from the factories that are closed, considering these objects to be their own property."

Larin, speaking of workers' control in a report at the first session of the Supreme Council of Popular Economy in March, 1918, said: "This experiment did not succeed: in certain places it led to the entry into possession of the workers of the enterprises where they worked, and in others to a fictitious control served as a screen to the proprietors of the establishment."

Finally along comes Lenine, who delivers this in a speech made at the third Congress of Economic Councils: "Experience proves, on all sides, that the more perfect the organization of a state becomes, the more restricted is the collective principle. Practical work depends upon the responsibility of one person, because this system enables one to discover and

THE AUTHOR of this article obtained this material from Ernest Greenwood, Washington correspondent of the International Labor Office of the League of Nations. He makes here a distinct contribution to the few dependable pictures that have come out of Russia. The amazing disclosures cannot be doubted since they come from Bolshevik statements—the Bolsheviks convict themselves with their own mouths of the ruin of industrial Russia.—THE EDITOR.

utilize the actual efficiency of the worker." This would seem to suggest that Comrade Lenine is not quite sure that the Bourgeois plant manager serves no useful purpose.

Nationalization represents a second stage in the relations between the Bolshevik state and industry. By the middle of 1919 about 3,000 factories or 90 per cent of the industrial productivity of the whole country had been nationalized, according to Deputy Labor Commissary Miliutin.

In the majority of cases the employees are invited to remain at their posts and carry on the work, but the threat is frequently added that those who arbitrarily leave their work will be brought before the revolutionary tribunal, and Lenine and Trotsky hold that human labor is the property of the state and that the state has the right to oblige the citizen to work and even to assign him to the work he must do.

During the year 1918 the whole question of compulsory labor was not raised, but in the latter part of 1918 it was again taken up and pushed to extreme limits.

The first article of the act of labor laws of 1919 says, "All citizens of the Russian Socialist Federal Soviet Republic, with the exceptions stated in articles 2 and 3, are subject to compulsory labor." The penalties provided for violations of the rules of compulsory labor include both fine and imprisonment and are imposed by what is known as the Labor Distribution Sections, which were created in November, 1918, as organs of the Commissariat of Labor.

Bukharin, one of the principal Bolshevik leaders, in an article

published in "Pravda," on December 28, 1919, takes the position that men are the country's best resources and that the state must learn to use them. He says, "Let us introduce military discipline into labor and we shall thus increase the productivity of labor."

On December 17, 1919, Trotsky published a document in "Pravda," entitled, "Liberty of Labor and the Obligation to Work—Compulsory Labor and Military System." Trotsky apparently believes that production should be guaranteed by compulsory labor and says that until the people become educated, universal labor service can only be accomplished by coercion, that is to say, by the armed forces of the state. He proposes to adopt military methods to economic production, thereby creating a sort of territorial economic militia which will be at the same time a basis of a war-time militia.

It was necessary, too, to provide management for this enforced labor and that had to be explained away. One document credited to Lenine this statement:

"You Menchevists and you revolutionary Socialists, you laugh at what we admit is a backward step. But it is better to explain openly to the people that, in winning over the middle class specialists by big salaries, we are betraying the principles of the Commune; it is better to discuss the thing publicly and thus educate the people to overcome these weak points than to conceal it.

"It is true that high salaries involve great danger; they exert a corrupt influence. But every reasonable man must agree that we cannot free ourselves of the evils of capitalism at one stroke; only organization and discipline will insure

our success." In other words, nothing but order and discipline will take the place of order and discipline.

What is the state of Russian industry after this shift from worker control to nationalization with enforced labor and the hated survival of the capitalist regime management?

In describing the condition of Russian industries for the year 1918, the labor bureau report quotes a number of statements by Sokoloff, who bases his facts on a series of numbers of various Russian papers for March and April, 1919. He says:

"However, in spite of nationalization



A Mongol type of Russian soldier.



A Bolshevik prisoner captured by the Poles. Trotsky is organizing this sort of peasant to impress the "obligation to work" upon his reluctant "brothers."

(perhaps even thanks to it), Russian industry is doing the Russian state great harm."

"All the textile factories in Petrograd, nineteen in number, are closed. About 30,000 workmen are idle."

"The sugar industry of Great Russia is passing through a painful time. Instead of the 6,000,000 poods of sugar, normal in 1917, only 1,542,900 poods were produced. But worse still is the decrease in head of cattle in the sugar producing districts."

"The glass industry is ruined. Only a fifth of the existing enterprises are working and these with great difficulty."

This description can best be completed by data borrowed from various numbers of the journal *Economicheskaya Jizn* of September 15 to October 16, 1919, showing the progress of the wrecking operations during the first eight months of 1919.

The strength of the nationalized cotton industry in Russia is assessed at 6,900,962 spindles and 164,226 looms. On the 1st of September, 1919, but 300,000 spindles and 18,182 looms were working. On January 1, 1919, there were 48,490 textile workers in the Moscow district. Within six months this figure fell to 15,290 and of this number 65.7 per cent were women and children.

The group of large metal works in Petrograd was once the most powerful in the country. Their technical plant was as good as the best in western Europe. They employed from 100,000 to 150,000 workers. Today the industry in Petrograd is in its death throes. Factories are ceasing to exist one after another and the number of workers has fallen to from 5 to 7 per cent of the normal.

The picture of ruin of Russian industry

can be completed with a brief sketch showing the reduction of the productivity of the worker under the new regime. In one instance in the textile industry the number of days worked during the first six months of the year 1917 was 130½, the average number of men working daily being 2,546 and the amount of material spun 107,314 poods. During the same six months of 1918 the number of days worked were 122, average number of men working 2,742, and the amount of material spun 66,518 poods. In other words, in spite of the increased number of workers, production fell off by almost one-half.

A Good "Spec" for Uncle Sam

SOONER or later Uncle Sam is going to own his own quarters for embassies, legations, and consulates in foreign countries. In some countries, notably in the Far East, this desired permanency of official headquarters for American services has already been achieved. By plugging right ahead on this proposition year after year, reinforced by the opinions of the increased number of Americans traveling in foreign countries, and by other well-informed elements of the business community at home, the Department of State will undoubtedly succeed eventually in convincing Congress of the wisdom of making this the accepted general policy.

Now, the question of the depreciated currencies of many foreign countries, in terms of the United States dollar, is something else, again. The American business man who sees merchandise that he wants in a foreign country, where the dollar is strong in terms of weaker domestic currency, is taking advantage

of this present strength of the dollar to purchase the desired merchandise and take a profit that is due to the exchange. One of our consuls now raises the point as to why the United States Government doesn't take advantage of its strong currency position, and do the acquiring on the very advantageous basis that present conditions make possible. Why, indeed?

The consular officer says it as follows:

"Up to date briefly, I find that because of the prevailing exchange conditions we would now be able to save approximately 30 per cent if we were to purchase at this time. . . . A suitable site with old buildings thereon, suitably located, could be had for approximately \$60,000 to \$220,000 at exchange based on our government rate (that is, par) . . . but this would be reduced by the prevailing exchange from 25 per cent to 30 per cent. The old buildings on any of the sites could be repaired so as to be useful for our purposes for from \$10,000 to \$20,000, but new buildings could be had for approximately \$100,000 normal exchange, or 25 per cent or 30 per cent less under prevailing exchange. The saving in exchange would obviously apply to the construction of suitable buildings, and when we consider \$160,000 for a site and new building on the less acceptable property, or \$300,000 for the most desirable site and new buildings, the saving would be very considerable on account of favorable exchange, the appropriation now necessary being only about \$120,000 to \$135,000. The American community is ready to lend a hand if desired."

The applicability of the suggestion extends to countries with a wide geographical distribution.

How Much Cooperation?

Raisin growers of California suffered the slings and arrows of marketing until a company took over the work; now the concern is charged with oppressive practices

RAISINS of the home-grown variety appear to be a natural monopoly of Fresno, California. Their production is practically confined to its vicinity, where the all-important conditions for curing are well-nigh perfect.

According to the Federal Trade Commission, the growers of raisins were formerly at a disadvantage in marketing their products. Cooperative organizations of growers failed to set things right, because of inadequate provision for finance and credit. A company then came into the field, making contracts for the product of 80 to 90 per cent of the acreage, and also contracting with a corresponding portion of the packers of raisins to handle only what they received from the company. There are 9,000 growers selling their crop to the one company.

As things stand now, the company has a capital of \$5,000,000. About two-thirds of the stock has been held by 3,000 raisin growers and one-third by merchants, professional men and other investors. After a yearly dividend of 8 per cent has been paid on the stock, any surplus is divided among growers in accordance with the amount of grapes they have produced. Control of the corporation until 1925 is vested in voting trustees.

The plan of operation is to pay the growers a tentative price, put the grapes through the appropriate processes and pack them, stimulate demand by advertising and otherwise, dispose of them in the various markets, and,

if possible, realize a price that, after meeting the costs of packing and distribution, will produce one-fourth of a cent a pound toward dividends on the company's stock and leave a surplus to go to the grower.

Almost a year ago the attorney general asked the Federal Trade Commission to make an investigation of the company and recommend how it should be readjusted to avoid any illegalities. In this investigation the wholesale grocers and the independent packers of raisins have been interested. The conclusion to which the commission has come is that, although sympathetic with cooperative methods among agricultural producers and believing that raisin growers were formerly at the mercy of concerns that bought and prepared their raisins for market, the remedy has outgrown proper bounds and in turn become a cause of oppression.

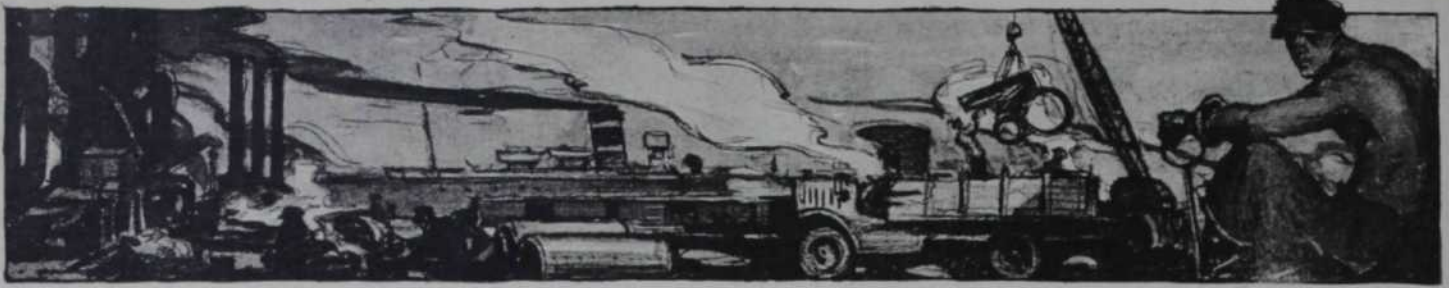
"Too High," Says the Commission

TO THE wholesale grocer the price of raisins has been increased from six and three-quarter cents a pound in 1913 to fifteen cents in 1919, and the 1919 price, the commission finds, is in excess of what is fair and reasonable. In the company's practice of selling to wholesalers at a "firm-at-opening price," and of giving guarantees against decline in prices, the commission finds a substantial lessening of competition. In the same category it places the company's purchase of competitors, contracts of the company with competitors

to fix prices, elimination of competition by buying up independent raisins that might depress prices, and curtailment of production by the growers.

If the company is to be so readjusted as to get the benefit of the Clayton Act's exemption of agricultural organizations from the operation of the anti-trust laws, it must eliminate its capital stock and restrict its membership to growers. If it takes this course, the commission suggests that it might finance itself through exchanging bonds for its outstanding stock, since the bonds would have a fixed return and hence would not involve the objectionable profit feature of stock. Even after such readjustment, however, and with the consequent benefit of the Clayton Act's exemption, the company would have to change some of its methods, such as contracts with other concerns to fix prices; at least, this is the point of view of the commission.

The company, however, has indicated that it may not care to seek refuge in the Clayton Act as an agricultural organization, but may prefer to stand forth as an ordinary business corporation. In the event it chooses this course, the commission says, it must cancel all contracts fixing selling prices on the condition of exclusive dealing, separate the packing plants it has obtained from competitors, abandon curtailment of market supplies and of production, and do away with its "firm-at-opening" price and its guarantee against decline. The alternative is dissolution.



Trade Associations on the Grill?

AGRICULTURAL IMPLEMENTS and their prices have been under the Trade Commission's scrutiny, because of a resolution the Senate some time ago addressed to the commission.

The Senate was apparently most interested in ascertaining if the price of implements had risen to such a point as to prevent farmers from making a fair profit. On this point the commission makes a negative answer, saying that the increase in prices of farm products was generally greater than the increase in implement prices and the increase in implement prices formed but a small percentage of farmers' total operating expenses.

The increase in implement prices in and of itself, however, the commission says was larger than manufacturers' and dealers' costs warranted. The increase in manufacturers' prices attracted most of the commission's attention and is declared to have been due, in part, to "price understandings."

This term is apparently the commission's latest contribution to the phrases with which we succinctly describe causes and attributes of restraints on trade. In this instance the term seems to have been devised as a short description for the activities of trade associations. Such activities, the commission believes, are calculated to result in price understandings. At any rate, this may be a conclusion from the commission's findings regarding manufacturers of agricultural implements.

For example, when the manufacturers' association promotes uniform methods of cost accounting the commission finds in its activity a cause for concerted advance in prices. Standardization of implements, the commission suggests, was a method not for eliminating waste but of making prices comparable. The commission refers to other incidents that might be of another sort, such as price-comparison meetings which would seem to be like old-fashioned "experience meetings."

Only the eight hundred and nine pages of print in which the commission sets out the details of its investigation will enable a student or a business man to ascertain whether the commission objects to all trade associations that make their members better manufacturers or has good grounds for alleging a concerted increase in price above the economically justifiable level.

The Famine in Capital

WAR'S IMPOVERISHMENT, which may not always be evident in the midst of inflation, is being dwelt upon in England in connection with demands for government economy.

In 1913 the British Government had expenditures around \$1,000,000,000, and the country's savings were in the neighborhood of \$2,000,000,000; thus, the annual surplus was something like \$3,000,000,000.

If depreciation in the value of money is taken into account, one estimate would make the \$3,000,000,000 of 1913 equivalent today to \$7,000,000,000. The taxes levied this year will amount to \$6,000,000,000. Thus, only \$1,000,000,000—equivalent to less than half a billion in pre-war money—remains for new industry and the other essential purposes into which a nation's savings go.

Opportunities in China

NOT WANTED is the label placed by a contemporaneous Chinaman upon many of our commonplace articles, in a report to his trade association in a foreign country. The reasons he assigns are various, and do not always appeal to the Anglo-Saxon mind.

For wire fencing he perceives little use in China, except in barriers around telephone poles to discourage celestial thieves, who show an incorrigible disposition to use the poles as a means of getting into houses. Elsewhere, we are told with an air of severe finality, bamboo hedges have served for fences for many centuries, with invariable satisfaction.

Canoes, it seems, have no sale, because the Chinese do not take interest in "sea sports" and also because Chinese waterways are so dirty and so crowded with native craft as to be incompatible with any thought of pleasure. Washing-machines have no chance, "because laundresses are very many." Churns are hopeless, for the reason that milk and its products are considered food fit only for infants and invalids.

The stump-puller, which does yeoman service on our new lands, almost causes the inscrutable Chinese to smile; at any rate, we are politely told that there have been no stumps to pull in China for a matter of generations, and all available land has long since been cleared.

With rubbers the case is different. Their utility even in China is admitted, but they have no chance on the Chinese market, we are solemnly assured; "for they are not in the fashion." That explanation yields food for thought. In the first place, it confirms a suspicion that has often arisen about the cause for some persons' use of rubbers. In the second place, it reminds us with something like a shock that people on the other side of the earth are likewise confirmed victims to the whims of mode.

Another Victory for Management

NO ONE should accuse the Bolsheviki of being false to their convictions. At the start they shook their manes, waved their arms and announced that they would free the working man and achieve the ultimate in democracy. They would do it in one leap.

Who did the work? Why, the workers. Highly paid managers and technical men were so many parasites on the industrial organization. Hence there was nothing to do but take the factories from their owners and give them to the men who worked in them.

In another part of the magazine is told how the Bolsheviki have achieved the supreme paradox. The factories are once more in the hands of highly-paid experts; instead of being free the workman finds himself under a compulsory labor law that makes him the slave of the state.

The same advanced ideas were carried out in the organization of the Red army. Here, too, the result was hardly what was expected. News that comes from Russia should be taken with a little salt, but it is safe to accept the statement that the Red soldiers were given more freedom than those who served in the "reactionary" armies of Foch or Pershing. Reports said that the Reds were not required to salute their officers; leaders were chosen by election, etc.

In August the Red horde was sweeping toward Warsaw. From every appearance, nothing could save the city but a miracle. The city was saved not by a miracle, but by management.

At the critical moment of the siege, Enter: General Weygand "and his staff of more than 600 French officers."

There were cynical smiles when the despatches carried the announcement that the only reinforcements sent Poland by the Allies were General Weygand and his French officers. It was assumed that Poland was "gone."

On the appearance of the French officers in the field, things took a decidedly new turn. No one can rob the Poles of credit



for a game fight but it must have been more than coincidence that immediately after General Weygand "and his staff of more than 600 French officers" arrived, the Reds lost interest in Warsaw and started earnestly in the direction of their own capital. At the time this is written, they are still going. The rout will rank with the most spectacular and complete in the history of warfare.

It was a victory for management. General Weygand and his officers were experts. They were schooled and experienced in fighting; that was their business. Against their intelligence the individualistic Red army was helpless.

Hymning Ponzi's Praises

THAT "a prophet is not without honor save in his own country" was written long before Charles Ponzi, Boston's newest wizard of finance, appeared on the stage. James Francis Morelli, whose name suggests that he is of Ponzi's own country, has sung the financier's praises in six stanzas which have been sent to *THE NATION'S BUSINESS*. Only a lack of space prevents us from printing in full this tribute to "The Third Greatest Italian." The other two by the way are Columbus and Marconi, which seems to show a certain lack of respect for d'Annunzio.

It is hard to gather from this garden of poetry the one flower that best describes the "coupon" king but at least we can add this to our dictionary of familiar quotations:

And now steps forward a humane figure, a man with a heart and a conscience,
Who has struggled for years to achieve success, and to dislevel the grafters
nonsense.

He has paid his investors fifty per cent on the reward they received for toil,
A deed supreme in the annals of finance that Satan himself cannot spoil.

The verse marches on to this triumphal climax:

What other financier has held the people so dear, in his quest for wealth and
booty?

Rockerfeller and Morgan and your other promoters have all failed to do their
duty—

Five per cent is the most they would pay you, while one hundred per cent
they would make—

No wonder the Wall street money kings made such a racket when Ponzi their
pie 'gan to bake.

Free and easy verse it is, but as later developments proved, in happy keeping with the theme.

A Traveling Man's "Cooks"

THE COMMERCIAL TRAVELER who plans to canvass Latin America has now been furnished with a guide which not only tells him the towns he should canvass, but what he should wear, and the transportation facilities he will encounter. In his wardrobe he discovers that a silk hat and a saddle are equally essential, if he contemplates visiting certain parts of the republics to the south of us, although it is to be presumed that the hat and the saddle are not to be used simultaneously, say, on the Quindio trail in Colombia.

Such a volume embodies a vast deal of detail. It jots down information about the climate for an amazing number of places, the hotels and in default of hotels the relative comfort of the boarding houses, the banks, the products, and means of reaching each town. The means of access suggest some of the trials of travelers, for they may have to make connections with a weekly train or a monthly steamer, or undertake a journey of days on muleback.

This guide, which has been published by the Bureau of Foreign and Domestic Commerce, has appeared in its first edition. As travelers' lore accumulates, other editions will be issued, each undoubtedly surpassing its predecessor in intimate detail.

Helping the Fight on Graft

LOUISIANA has been added to the list of states that have passed laws aimed at bribery in business and it is pleasant to be told that *THE NATION'S BUSINESS* helped in the work. In February of this year appeared an article by William R. Benet on "The Itching Palm in Business" and the organizations that are fighting graft in trade made good use of it. Louisiana's problem was largely one of the New Orleans water front, where secret "commissions" were a trade custom. Thousands of reprints of "The Itching Palm" were circulated among the dealers in ships' stores, and as one worker in the cause writes:

"I give *THE NATION'S BUSINESS* full credit for its share in putting the new idea over in Louisiana."

So deeply rooted is the custom in some lines of business that the new Louisiana law specifically outlaws any defense of "trade custom." Moreover it grants immunity to any person guilty of the offenses specified who shall report the facts within six months after the crime is committed. Bribery is a crime that involves two wrong-doers, and under such a law there might be a breaking down of that honor which is said to exist among thieves.

Have Exports Gone Crazy?

ECONOMIC CONFUSION that arose from the war has not yet come to an end. Scotland has recently bought steel rails in the United States. American coal has this summer been carried across the Atlantic to England, where the vessel took on board Welsh coal with which to make steam for the rest of the voyage to northern Europe. England faces a ration of butter at the rate of an ounce a week, while the Danish butter which normally goes to its markets crosses the ocean to New York harbor. Denmark, too, has its causes for complaint; needing coal, it has lately gone all the way to the other side of the world for it, making a contract for coal from Chinese mines.

Meanwhile, a cargo of newsprint paper is on the way across the ocean to New York from Germany. In Argentina, the price of bread has gone to such a point that the government is negotiating with European countries in an attempt to buy back Argentine wheat.

The Briton and His Telephone

GOVERNMENT OWNERSHIP of a utility has its penalties. When the appropriate British official recently asked Parliament for \$50,000,000 to develop England's telephone system into "the finest in the world" he was told that he was beginning with the worst known to man.

Manchester has a story about the course of events when a British citizen had his government install a telephone for him. Two men did the wiring. Two days later two other men connected the wires of the house with the exchange. After three days more a fifth man inspected the progress that had been made, approving everything. The following day a super-inspector appeared and declared the wires had been led into the wrong exchange.

After another decent interval a man brought the instrument, and was followed in the course of several days by a gang of men who connected the instrument.

These proceedings took three weeks. Then an official called to test the instrument and, after admiring the installation, remarked, "You must have possessed some influence to get this done."

At the time of the latest advice from England, the subscriber was still unable to get his first call through to central from his new telephone.

The Business Man's America—No. 6

CALIFORNIA

The Forty-Niners made it a man's state, and their spirit of adventure stood them in good stead when the day came to turn from gold mining to agriculture and irrigation

By ARCHER WALL DOUGLAS

WE ARE used to hearing California's story told in terms of gold from the metal of Bret Harte's Argonauts to the gold of wheat fields and orange groves. Mr. Douglas tells it in terms of men.

The same spirit that led the pioneers to face the fevers of Panama or the hostile Indians of the plains, that laughed at much the east held sacred, yet made its own laws and enforced them in its own way—that spirit made

possible the turning of California's arid lands into the world's greatest orchards.

It was this too that created her intense state pride, and her ability to overcome earthquakes by ignoring them. Mr. Douglas sees in California a great democracy freed from provincialism by its very position; to the westward it looks upon the oldest civilization, and to the eastward upon the newest.—THE EDITOR.

IN THE STUDY of the states, one of the compelling elements in the situation is that state consciousness and state pride in which one commonwealth differs from another. Kansas, for instance, differs essentially from any of the four sister commonwealths which encompass her, however much the surface indications are of general similarity and likeness. Only as these essential differences become apparent in the course of study do we realize the momentous truth that each state is a separate and distinct entity—the composite expression of the traits and peculiarities of its people—and not merely a geographical expression with physical boundaries.

The philosophy and feeling of states' rights, however they may be defined, have far deeper root than merely the legend of thirteen separate colonies united for a common cause. For in the last analysis they rest as a living force upon that unexpected yet vivid and undying state consciousness of the people of each separate commonwealth.

In none of the forty-eight bodies which make up the union is this trait more pronounced and outspoken than in California. The story of the state really begins with the discovery of gold in 1848, for that event altered the history of California for all time. It broke the spell of a dreamy, superstitious Spanish and Mexican past and ushered in a new commonwealth of robust democracy.

In those days, when railroads were largely local, California was more remote from most of the United States than was Europe. From the east overland was a long and heart-breaking trek. When Kansas and Nebraska were passed there were ahead the towering Rockies, flanked on east and west by the thirsty, pitiless desert. There was death in the path, in the shape of savage Indian riders of the plains, in lack of water and dearth of food. When all these were left behind, there were still the snow-clad, lofty Sierras barring the way ere the gold fields were reached. Or else there was the long, long journey around Cape Horn, or across the deadly and fever-infested Isthmus of Panama.

Yet nothing stayed these Argonauts, mad with the lust for gold, and soon the mining camps were overflowing with humanity that seemed at once to revert to original type. It was a man's country in deed and thought, and much of this still perseveres unto this day. The miners were a motley crew, adventurers, human birds of prey, all jumbled and jostled and mingled with the pick of the world's

manhood. Its blasphemy, its disregard of every law save that of the jungle, its lack of fear of man or God or devil, its courage and endurance, its human sympathy and loving kindness, its faithfulness unto death in friendship, have been immortalized in "Roughing It" and "The Luck of Roaring Camp."

It was a law unto itself, for all the rest of the world was far away. There was no past, no history, none of the illusion of tradition and legend. Only the present and its realities. So there was immense tolerance and a plentiful lack of prejudice, save for some unmanly things, and for cowardice, and treachery, lying and stealing, for which there was the vigilance committee and the rope. For law and order, after its fashion, had to be maintained, as the human birds of prey soon learned to their undoing.

Inevitably the expression of this isolated and pioneer spirit developed into an intense individualism which yet was cosmopolitan and not provincial. For the Argonauts were from the four corners of the earth, and the usual narrowness of the pioneer was largely absent. This individualism, paradoxically, yet naturally, assumed the collective form of a state pride which even today probably has no parallel among all the forty-eight commonwealths of the union. The geographical isolation naturally bred an intensity of local interest, for the physical remoteness from the rest of the world made the matters of state happenings of most moment.

Obviously the people of the state must supply their own wants so far as nature permitted and as far as lay within them. For all help was afar off. Besides, there was much in all that lay around them to awaken their enthusiasm for their adopted country. It is a land of infinite variety of scenery. Its snow-capped Sierras are full of crystal streams, of wondrous lakes, of picturesque valleys and canons, and of the oldest and most superb forests in all nature. There are great rivers and great land-locked harbors. There are long stretches of desert, silent, hostile, forbidding, yet with a charm that can be understood only when experienced.

There are naturally great differences in temperatures in a land that is about 780 miles in length, from 150 to 350 miles in width and 158,000 square miles in superficial area.

Primarily it is a dry climate. The coast range takes much of the moisture from the Pacific, making the great valley between them and the Sierras a land of moderate rainfall, while the Sierras absorb what moisture is left

from the winds from the Pacific, and give it to the country in many streams for irrigation and electric power. The annual precipitation varies from nothing at all in Death Valley to seventy-five inches in the heights of the Sierras and the Klamath Mountains of the northern portion of the state. In general, from twenty to twenty-five inches' annual rainfall is accounted sufficient in the country outside of the arid sections, and most of it falls between September and May. For the summers are almost rainless, save in the lofty mountains. There is fog at times on the more northern coasts, but on the whole it is a sunlit land.

Especially in southern California, the charm of the climate makes mere existence a pleasure. The great ocean that breaks upon the thousand-mile coast line tempers the extremes of heat and cold.

When the Gold Fever Cooled

IN time the output of gold decreased, although it is a large economic factor even unto this day, usually the largest of any of the states. The growing population must needs find additional means of subsistence and there was always the necessity, because of the insularity of the state, of the population being as self-supporting and as self-contained.

Population was increasing in far greater proportion than that of the United States as a whole. For California was the most widely known country in all the world. The splendor and sordidness of the newly created scene, the return to primeval existence of the argonaut adventurers, the rude untrammelled life appealed as a return to primitive nature to an already jaded and conventional civilization. So to the adventurous and daring throughout the globe, California was a land of poetry and romance, and of opportunity such as could not be matched elsewhere.

In the 1850-60 decade population increased more than 300 per cent. Naturally prices of food products rose to fabulous heights. So there was every incentive to the prosecution of agriculture. This was the second momentous epoch in the economic life of the state and blazed the way for that agricultural development which has scarcely a parallel elsewhere.

Much of the soil is naturally fertile, being what is known as "residual soil," having been brought down from the lofty mountains through endless ages by the numerous streams.

Live stock raising had been one of the important pursuits before the country was

taken over from Mexico. So there were great haciendas or ranches of 150,000 to 200,000 acres, remnants of the feudal agriculture which has always marked Spanish rule in the Americas. The restless energy of the new agriculturists turned to the raising of wheat and for several decades California was among the principal wheat raising states with the crops grown in the great central valley. Much of it was exported, for the transcontinental railways had now crossed the country and there was also much shipping by sea.

But there was ever present a handicap for which there was no remedy. Precipitation throughout the state, save in the heights, is practically all in the fall and winter. So crops, in the growing season, from April to September, depend for moisture upon that conserved and held in the soil. But there are years and seasons when the rains fail and in the dry years the crops were in a parlous state. The opportunities of climate and soil were too great and too universal to depend entirely upon the rainfall alone when other means of securing moisture lay close at hand. There was nothing grown in the temperate and sub-tropical zones that could not be grown in California if the needed moisture could be had. So the thoughts of the settlers turned to the oldest, most certain, and most productive of all forms of agriculture—that of irrigation—which lay at the root of ancient civilizations.

There was now to be witnessed in a modern democratic state a recrudescence of the civilization of the desert. There was much waste land, some in the central valley, and much more in the southeast, where for untold centuries fierce heats and the rocks and sands of the lonely and forbidding desert held undisputed sway. But there was also much water, in the underground flow that could easily be tapped, and in the many streams that came down from the heights of the Klamath ranges and the far-flung ramparts of the Sierras. The latter in especial were the source of California's agricultural and economic life. The warm, moisture-bearing winds from the Pacific broke into "a dust of blue rain" on the snow-capped heights, and went on eastward dry and parched, robbed of all their moisture.

The days of gold mining as the principal industry were over, and those of agriculture

as the foundation of its economic life were just beginning. But the fierce and dominant individualism of the mining life must needs take on cooperation as the keynote of success, especially in all the ways of irrigation. For irrigation is essentially a matter of community and team work.



From the East it was a long and heart-breaking trek.

For a commonwealth of its great size, there was but small proportion of arable land. There were swamps, large in extent but mostly capable of being reclaimed. There was a wide stretch of hopeless desert in the southeast. And there were uncultivable mountains. Of the total area about 28 per cent was in farms and about half of that in turn was improved. And of the improved land about one-third in the course of time was under irrigation. The charm of irrigation is its certainty. Given enough water and there is rarely any question as to a bounteous harvest.

In 1869-70, when general railroad transportation was established in the San Joaquin valley, irrigation began to undergo large development, and a decade later this was greatly increased by the wide extent of fruit raising. At this period, only a generation since the real beginning of the state, it was an easy prophecy for the student as to what the future had in store.

Given a country of boundless resources, and a people whose spirit and energies had been created by the stern necessity of a battle for very existence, the only possible result was an era of great and varied development. The first problem was to take advantage of climate and irrigation and to try the venture of a diversification—hitherto unknown in America—of all the agricultural products possible. Along with such production must go the all important factor of distribution. For it was a far cry to the great cities of the east where it must market its surplus products, and where it must encounter all manner of competition, domestic and foreign. It was a long haul to these consuming centers and the cost of transportation was heavy. So there must be established a reputation for the quality and appearance of its fruits and garden truck.

It was likewise well to raise in great quantities such products as were not peculiar to the rest of the country, so that their novelty and rarity might be their best selling factors. There was only one way to bring these things about and that was by those cooperative "growers' associations" which alone make possible to many individual growers the intelligent, efficient and profitable marketing of their products. These associations have representatives in all the leading markets, thus constantly in touch with their prices and their

possibilities of consumption. Moreover, the associations know all the intricacies of packing and preparing commodities, and the innumerable details of transportation.

Hence it was that in due time California fruits and vegetables had a name and reputation in every section of the union. They possessed the distinction of personality, even in districts where they were merely different from, rather than superior to, the native product. They went eastward, and still continue to go in thousands upon thousands of carloads annually. California citrus fruits, oranges, lemons and grape fruits, have practically driven the foreign imported product from the home market.

In large crop years California ships 50,000 carloads of citrus fruits, netting the growers about \$50,000,000. And in 1916 there were shipped out over 106,000 carloads of fresh fruits and vegetables or 16 per cent of those shipped by all the forty-eight states. The

next step was the drying of fruits, and the canning of fruits and vegetables. These methods of food preparation and preservation gave great opportunities for advertisement and for new markets where the matter of time in transit or of use were of small moment. The state raises about 50 per cent of all the peaches in the United States, but most of them are marketed in either dried or canned forms. The grape culture became an extensive industry, in table grapes, and in raisins, which now practically supply the demand throughout the country, which once knew only the foreign article.

Some of the statistics are rather staggering. Here is a little one: The output in 1917 of cured fruits—apples, peaches, raisins, prunes and the like—was 341,000 tons. Of similar magnitude is the production of nuts, especially walnuts and almonds, whose annual output is reckoned in thousands of tons.

It is now the second rice-producing state in the union, and since the Imperial valley was redeemed from the desert by the salt-bearing waters of the Colorado river it is reckoned among the cotton-producing states.

It is growing the date palm, brought from the Sahara, on a large scale, and is experimenting with various tropical fruits.

Many and Valuable Crops

IT no longer produces the agricultural staples in great quantities, but rather a multitude of many things far more profitable, and on which it is building an enduring reputation as a source of supply. In 1917 it shipped out of the state 212,000 carloads of fruits, nuts, vegetables, olives, in all their various forms—fresh, dried and canned.

It is a curious and interesting fact that the growers of commercial fruit on a large scale are among the most intelligent of agriculturists. For they must know many things. They must be familiar with some phases of meteorology, because the weather is at once their best friend and their worst enemy. They must have some knowledge of chemistry and entomology, for their life is spent in ceaseless warfare with insects.

Though agriculture is, and always will be, the greatest of the state's industries, there has been a like development in every productive line. There are many hydro-electric plants, because of the numerous streams which furnish the needed power for manufacturing. There is abundant fuel in the great oil fields, which prior to the discovery and development of the Texas district were the second in production in the United States.

Naturally manufacturing turned to the use of its own raw materials, lumber, beet sugar, flour mills, the various canning industries, petroleum refining and cement. Later on the manufacturing industry made all sorts of things from finished materials in iron and steel to many of the varied products of modern economic life, and in 1914 had climbed to ninth place among the states in manufacturing.

In the way of mines it has many minerals other than gold; copper, much pottery clay, some lead and zinc, both silver and quicksilver, a coal production much less than in past years, natural gas, and a rather long list of other metals and minerals.

It is one of the great lumber producing states, with timber taken from its forest-clad mountains. It has oaks, red-woods, gum trees, and many species of coniferous trees, cedars, firs, and yellow and sugar pines. Also, the superb Sequoia Gigantea. These magnificent trees are the oldest living specimens of organic life. The concentric rings of some of those which have been felled indicate a span of life which antedates all known recorded history.

In its interest in education and the amount spent upon it, California is in the forefront of the states. The enrollment in the public schools grew from 174,000 in 1883 to 604,000 in 1918, while in the latter year the state expenditures for all educational purposes were \$37,000,000. The giant young state university had 205 students in 1883, but in 1919 it had outstripped in attendance all the universities in the country, save one, with an attendance of 9,000 students. The population is low in illiteracy, despite the many foreigners, an undue proportion Asiatics.

A few statistics tell better than many words California's vivid interest in education. In 1916 she was fifth in her total expenditures for public education by the state, there being only four states—New York, Pennsylvania, Illinois and Ohio—ahead of her. But taking the expenditures per capita, she led all the states, with an expenditure of 50 per cent more per capita than the commonwealth next in rank.

A Tolerant Democracy

THE solution of what the economic future holds for California is even easier than a quarter of a century ago. The spirit of further development of all constructive and productive possibilities has a momentum which cannot be stayed. For its underlying impulse and initiative is in that inherent and conscious democracy of which California furnishes so peculiar and remarkable a type.

It is a democracy which knows much travel, especially in its own country, and which has wide tolerance, free speech and free thought. It is imbued likewise with a cosmopolitanism because of the state position midway between the east and the west, which makes its people in great degree citizens of the world. The economic life of the future lies along the path of democracy. And our economic troubles today are largely because of our departure from the ways of democracy. Especially in that unduly developed class consciousness which seeks its own betterment at the expense of all else. It is the antithesis of democracy which seeks first the general welfare of the many and is content to share therein.

Now there are various expressions of democracy, which are yet alike in vital substance. The democracy of North Carolina differs from that of Kansas, and that of Wisconsin yet again from that of Ohio—while that of California differs from them all in outward form and expression. Peculiarly, however, is it that triumphant phase whose seer-like vision prophesies the time when the knowledge of democracy shall cover the earth as the waters cover the sea.

EDITOR'S NOTE: This is the last of a series of geographical character studies by Mr. Douglas.

Paying the Bill for Carelessness

We sacrifice 20,000 lives and \$300,000,000 yearly in flames and most of it could be prevented; we have a fire a minute and every one of them is a potential conflagration

By WILBUR E. MALLALIAU

General Manager, National Board of Fire Underwriters, President, the National Fire Protection Association

FIRES cost this country a million dollars every business day and the bill is going to keep coming in until you and I get together and stop it. For you and I are the ones that call the tune and you and I are the ones who pay the piper.

Just plain American carelessness is the cause of most of our fires, and it's fair to stress the word American, for in 1913, that year before the war to which most industrial statistics go back, fires cost this country \$2.10 per capita, while they cost France 49 cents, England 33, Germany 28 and Holland, whether because she's more careful or because she is better paid, but 11 cents.

For years the National Board of Fire Underwriters has been trying to drive home the truth that most fires can be prevented. Its Fire Prevention Committee has been making surveys of American cities with results that led them to say, "The American

city as it stands today is built to burn." Everywhere they have found and marked what they call "black blocks," blocks that are certain sources of danger. Time and again the black blocks have figured as centers from which conflagrations have started.

The cause? Lack of proper building restrictions is one. In our cities buildings of inflammable material are scattered haphazard throughout business and residence sections. A city practically unburnable is not a dreamer's vision. It is not alone a matter of material. The engineers of the National Board showed that in their work with the hastily erected army cantonments, they built them largely of wood, but under supervision that safeguarded them in spite of the unfavorable conditions of occupancy.

But cities are slow to learn their lesson. Predictions of fire disaster have been made that were almost uncanny. The fire engineers

who visited San Francisco in 1905 recited the conditions that prevailed, talked of "conflagration breeders, high winds and comparatively narrow streets" which made the probability of a conflagration alarmingly severe. In less than six months the prophecy was fulfilled; the work of 50 years was undone, with a loss of \$350,000,000.

The answer is the same to the fire that wipes out half a city or the fire that leaves the individual homeless. In nine cases out of ten it is carelessness.

It is carelessness we are fighting, and the motto for Fire Prevention Day, which will be celebrated all over the country on October 9, might well be: "If you don't want a fire, don't start one."

It has become a big thing—this fire prevention day—it is observed with special programs in more schoolrooms than any other day except Christmas; it is the only obser-

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STRAIGHT LINE METHODS

vance in which the fire departments of many cities regularly participate. It receives active cooperation from chambers of commerce, boards of trade, manufacturing associations, Rotary and Kiwanis clubs and business houses without number. Boy Scout troops, moving picture theaters and even churches, take a hand.

Our annual fire loss, which exceeds \$300,000,000, is equivalent to 5 per cent interest upon a capital fund of \$6,000,000,000. America may, therefore, be said to have a permanent investment of \$6,000,000,000 in the expensive habit of playing with fire. The outlay does not represent money transferred with attendant stimulation of business activity; it represents resources blotted out of existence. Whether insured or uninsured, there is no fire which does not leave the country definitely and permanently poorer. Worse than all is the fact that more than 20,000 human beings are burned to death each year in our land alone. The war cost us 50,000 lives in battle.

Fires That Run Wild

OVER all there is the ever-present danger of fire that becomes a conflagration; that escapes control and spreads over a city. Sometimes it is not checked for several days, as in the case of San Francisco, and the disaster is broader far than the burned over territory. It is generally admitted that the San Francisco conflagration of 1906 was an important factor in the panic and hard times of 1907.

With American life tending more and more to congestion in cities, the conflagration hazard is increasing. The National Board of Fire Underwriters through its Committee on Fire Prevention has been engaged for some years in making exhaustive engineering surveys of American cities, some 293 cities having thus been covered, and the conflagration hazard has not been rated as "low" in a single instance.

Most fires are preventable. Fire is not an "act of God." It is traceable in most instances to very human dereliction. There are approximately 1,500 fires each day in the United States alone, or an average of something more than one a minute through the twenty-four hours, 365 days a year. Reports covering the greater number of these fires are received by the National Board of Fire Underwriters in its Actuarial Bureau and are there analyzed. It was found, for example, in 1918, the last year of completed statistics, that fire losses were divisible as follows:

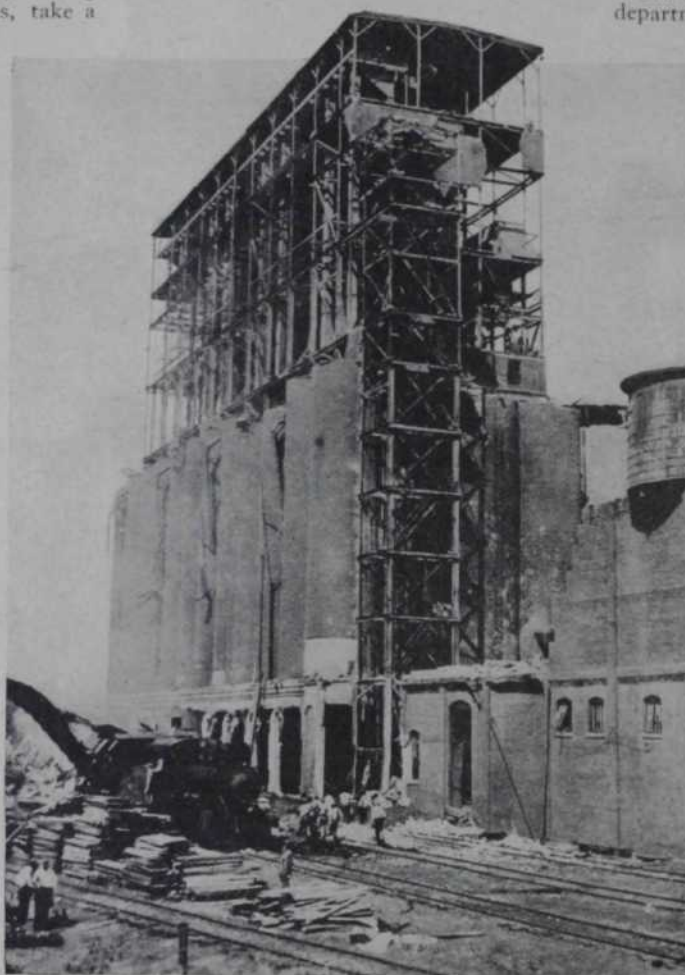
"Strictly preventable" causes	\$65,812,563
"Partly preventable" causes	129,254,607
"Unknown" causes, probably largely preventable	88,035,931

While these figures do not include all of the losses of the year, they are enough to impress the lesson of preventability. Indeed, there is some reason for believing that in the last analysis there is only one real fire cause; namely, *American carelessness*.

But fire will not be prevented until the American people wish it to be and that means cooperation. Firemen may do their part; engineers may do their part; insurance companies may do their part, but the public must help. There, then, is the task of the civic

and business organizations and the civic and business leaders of every community.

What, then, can you do, civic organizations, business organizations and business men? Here are a few practical suggestions:



Courtesy, Bureau of Chemistry, Department of Agriculture.

After an elevator fire in the southwest. Fourteen men lost their lives here and the property damage was about \$1,000,000.

A. FIRE PREVENTION COMMITTEES.—Organize permanent standing committees for this specific purpose. Do not throw the burden of such activities upon other committees, for the work is quite distinct and needs to be promoted upon its own basis. Such committees when organized can become the means for promoting the suggestion that follows.

B. ENGINEERING INSPECTIONS.—Start at home by having inspections made of the premises under your own control. These can be secured through local insurance men or fire departments. It is quite possible that you may be harboring hazardous conditions which you have never realized.

C. SELF-INSPECTION.—Proceed immediately to install self-inspection systems. Premises do not stay safe where a human factor is involved. For example, one wholesale grocery concern moved into new and modern premises that were excellent in every respect. Three years later an inspector found nearly sixty different specific fire hazards of a serious nature, all of which had originated in that interval. Model forms of self-inspection blanks can be obtained upon application to the National Board of Fire Underwriters, 76 William Street, New York. They are not intended for the fire insurance companies, but for the use of the plant management itself.

D. FIRE PREVENTION BUREAUS.—Every city should have a fire prevention bureau under the direct supervision of the chief of the fire department. The preventing of fire is coming more and more to be recognized as among the most important phases of fire department work.

E. ENGINEERING SURVEYS.—Familiarize yourself with the present condition of your city in the matter of fire department equipment and personnel, fire alarm systems, water supply and building construction. This information, under a recent date, you will probably find contained in the report of the last survey made by the engineers of the National Board's Committee on Fire Prevention and Engineering Standards. Such reports will be sent upon request from any chamber of commerce or other important civic body. Upon its receipt, note the recommendations made by the engineers for the purpose of correcting hazards. Examine the map of the "congested value district" and see whether they indicate the presence of any "bad blocks." Learn where the indicated hazards have been corrected since the report was issued; if not, learn the reason for delay and try to get action.

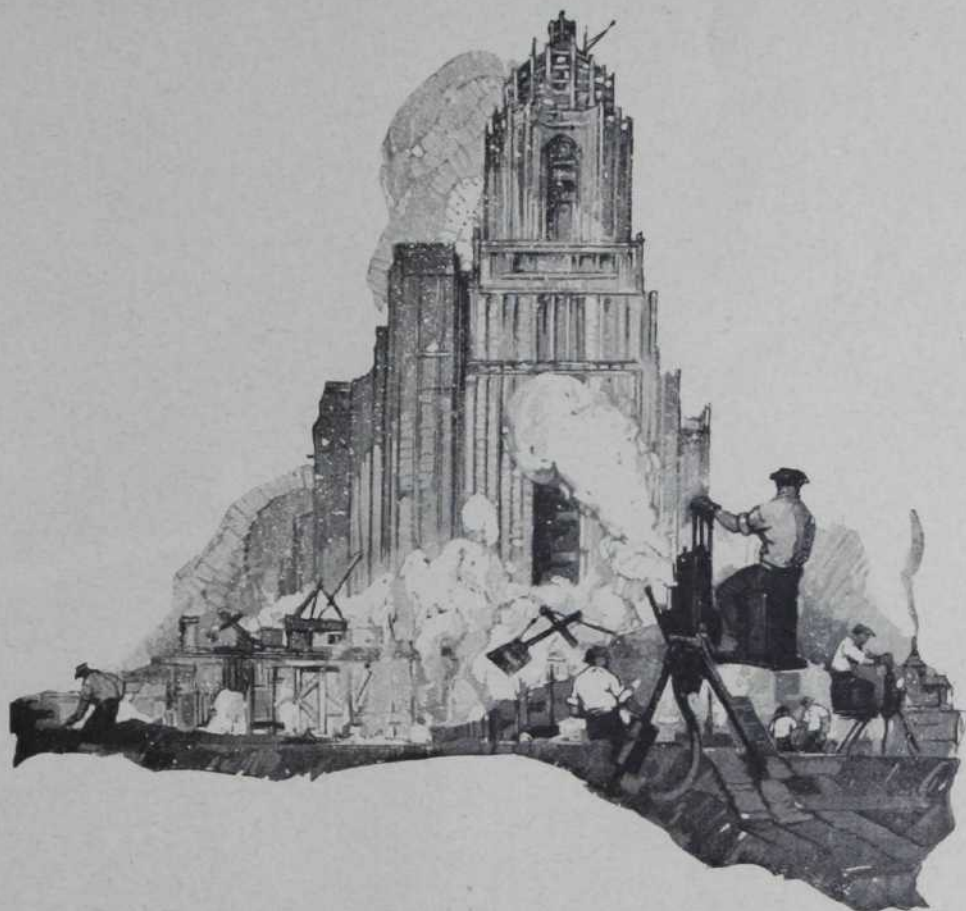
F. FIRE PREVENTION EDUCATION.—The National Board of Fire Underwriters has prepared for the United States Bureau of Education a 96-page illustrated manual entitled "Safeguarding the Home Against Fire" for use in the schools of the country. More than 500,000 copies are now in use in American schools. Several states have already passed laws making fire prevention education compulsory. This constitutes no interference with school work since it has been found that an hour each month upon the subject is sufficient for good results. There is no better place to begin the work than with the children in the schools.

Ice Cream Tubs and Freight Cars

THE PROBLEMS that confront business are apt to differ only in size. The railroads struggle to get the most out of a freight car and talk in terms of hundreds of thousands of cars and hundreds of millions of dollars. An added mile a day for each car is equivalent to 100,000 new cars. Increase the average loading to 30 tons and you have the equivalent of so many more thousands.

The ice cream manufacturers have a problem that parallels that of the railroads, but they talk in terms of five gallon tubs and thousands of dollars. The same end is sought—to make the tub move faster. It is easy to figure: The annual charge for containers works out at 3 cents to the gallon of ice cream. On a basis of 100,000 gallons the expense is \$3,000.

The average tub is away two weeks. Cut that in two and \$1,500 a year is saved. What is the remedy urged? Charge the retailer for the container and give him back his money if he returns it promptly. Some system of demurrage charge seems to fit the case of ice cream tub as well as big brother, the freight car.



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Humanizing the College Man

Industry has finally taken a decided step to prepare men for leadership in industry by overcoming the tendency of schools to turn out "sliding rules" instead of personalities

By WILLIAM A. McGARRY

GRADUATES of technical schools who know much about engineering or chemistry, know little about men. As Matthew T. Brush, head of the Hog Island shipyard, puts it, they do not know what man to pat on the back, what man to take by the arm, when to be familiar and when not to be. They are "sliding rules, not human beings." And as a result, American industry today is facing the most "appalling shortage of trained men in the history of the country."

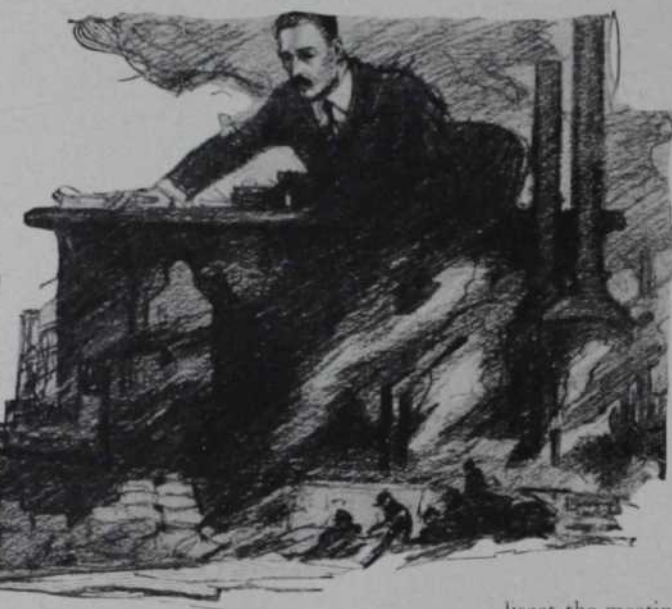
More than 100 leading American executives of big corporations subscribed to that phrase when they agreed to participate in the 1920 meeting of the Technology Clubs Associated. They had been informed that the program of the meeting was to be a plan of cooperation between industry and education, drawn up by Dr. Hollis Godfrey, president of Drexel Institute, Philadelphia. At the conference, held at Drexel Institute March 26 and

27, more than 60 of them agreed to subscribe \$2,500 each to finance the plan.

Since then the total of subscribing firms has grown to more than 200, and the amount invested by each has been increased by their own voluntary action to \$5,000. A general committee has been appointed, headed by Dr. Godfrey, to bring together all industries and each of the 620 colleges and universities in the United States, and some in Canada. Through this committee joint specifications will be written, calling for men. Some of the industries, paper, rubber, shoes, metal manufacturing and others, wrote out their specifications in advance of the meeting in Philadelphia. Others are doing it now in cooperation with members of the general committee.

The plan contemplates that every technical school in the country shall select one or more industries for which to train men. Already it has been agreed by scores of manufacturers in the industries named that there shall be active cooperation between such colleges and the plants. In other words, a student training for a particular job will have opportunity to do shop work during his vacations, and shops, laboratories and offices of the plants will be open to classes at all times for purposes of illustrating some particular process which is being taught.

Dr. Godfrey started his business life twenty-five years ago as a stoker in his father's mill at Lynn, Mass. He was studying at the Massachusetts Institute of Technology at the time, planning to become a manufacturer. In his first job he was struck with the importance of the foreman to industry. Too often, he found, this minor official was an obstacle to the rise of the worker. This embittered the men. Also it deprived the employer of latent abilities. Dr. Godfrey



came to the conclusion that the foreman ought to be educated.

He started one year ago to test his ideas at Drexel Institute. A survey of Philadelphia industries was made to find technical experts with teaching experience. It brought them to light by thousands. Today the "who's who" of the Drexel night school faculty reads like a roll call of industry. The efficiency manager of the Bell Telephone Company of Pennsylvania, the assistant general manager of the Harrison Safety Boiler Works, the chief engineer of the Philadelphia Rapid Transit Company, are instructors of various classes.

When the Colleges Failed

DR. GODFREY knew that the colleges and universities were failing to teach men how to understand and appreciate men. But it is a question whether he understood the extent of this failing until he brought educators and industrial executives to Philadelphia to consider the plan of cooperation, and to demonstrate to them by the success at Drexel that industry ought to utilize the educators on its payroll. Speaker after speaker stressed the fact that the best of the colleges and universities are turning out from their technical schools men thoroughly trained in the theory and processes of their chosen professions, but utterly uneducated in the "human nature fundamentals."

Mr. Brush summed up the sentiment of the executives when he said that college graduates cannot "sell themselves"; either to corporation heads, for the purpose of getting a job, or to workmen, for the purpose of holding it. In one of his speeches at the conference Mr. Brush said that while he was at Tech the whole atmosphere of the place was such as to give him the impression that bank presidents, railroad executives and corporation heads "wore halos." And he added, "it took me years to learn that the biggest of big men are human, when I should have been taught

it in college." Brush even went so far as to assert that an executive's task is 99 per cent ability to handle men, and 1 per cent technical knowledge of the work to be done.

Three "mastering human needs of the present day" form the basis of the plan, in Dr. Godfrey's opinion. One is the need of using existing industrial capacity to meet a world shortage of goods. The second is the need of developing new capacity and machinery of production and distribution for the same end. The third is the need of producing a sufficient quantity and quality of management men—"the mind workers of industry" from foreman to president—to

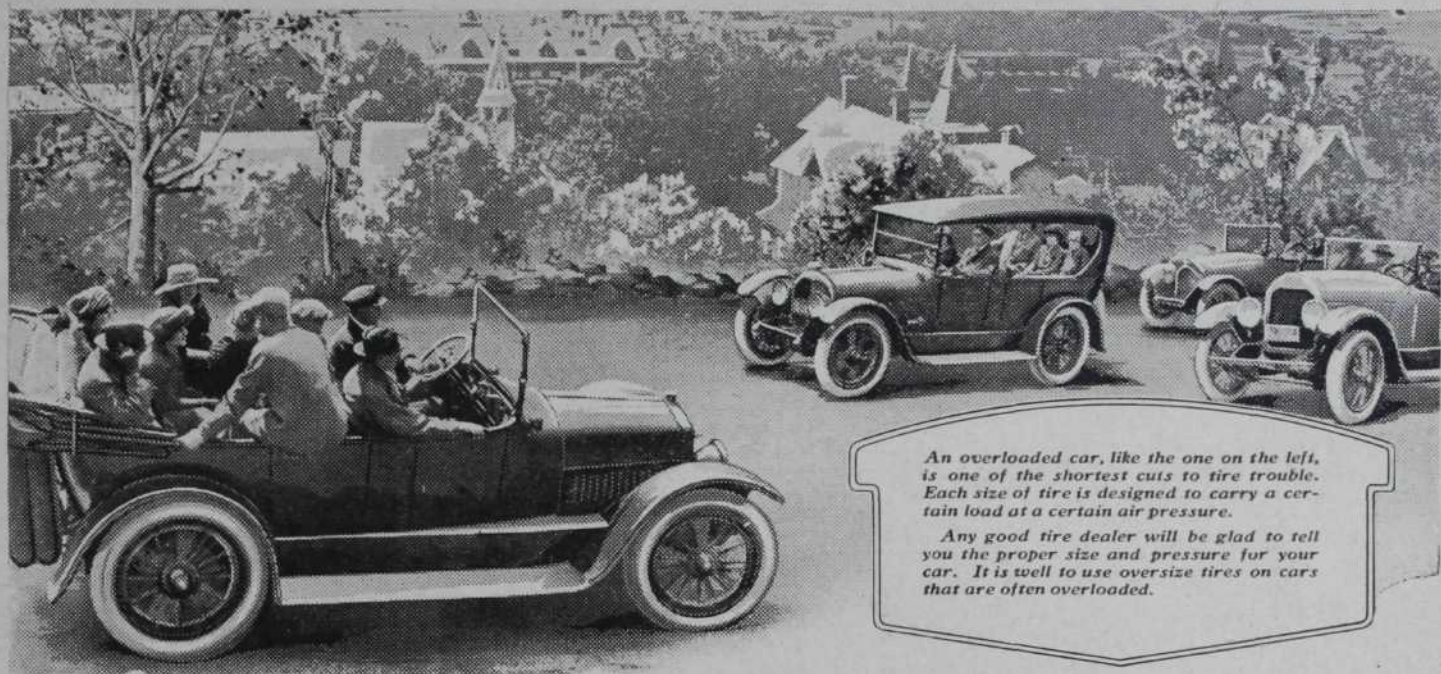
direct the meeting of the first two needs.

The originator of the plan believes, and executives of corporations like the Pennsylvania Railroad Company and the Cities Service Corporation have proved that they agree with him, that American industry is in more peril today by reason of the shortage of management men than by any other factor, even that of labor unrest. He holds that a condition of executive strain has arisen which is fast sapping the energy and vitality of big men. Production of management men will meet this. Likewise, he holds, it will decrease the strain on the operatives, a strain produced by inability of management men, particularly foremen, to teach the operatives how to perform their tasks in the most efficient way.

And this brings up again the human equation. Dr. Godfrey believes that it has more to do with industrial unrest than any other factor, particularly as it appears in the relations between workmen and foremen. He holds that no other official makes so much difference in the life of the average worker.

One reason why such rapid progress has been made in putting this plan into operation is because of the action of the American Council on Education, which offered itself as the machinery, already existing, for reaching the colleges and universities. This offer was accepted. The general committee consists of three sub-committees, headed by that of the Council, whose members include as an industrial sub-committee:

Dr. R. S. Quimby, Hood Rubber Company; Col. B. A. Franklin, Strathmore Paper Company; W. C. Mattox, Walworth Manufacturing Company; Dr. H. B. Shaw, The Doherty Company; Sidney Coolidge, Lowell Bleachery; Albert Bigelow, Ludlow Manufacturing Associates; Fred B. Rice, Rice & Hutchins, Inc.; Robert G. Griswold, The Doherty Company, and G. B. Heckel, of the Paint Manufacturers' Association of the United States.



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NOTHING is surer than this—that the man who bets against the informed opinion of the tire users of this country is going to *lose*.

The average American motorist is essentially practical. He may get off the track now and then.

But always you will find him going right in the end.

* * *

The trouble with the irresponsible type of tire dealer is that he allows his ideas of his customers to be bred in an atmosphere of distrust and

fostered by a small coterie, not at all representative of the motoring public.

Not every motorist of whom he takes advantage always finds it out immediately.

But the time it takes for motorists generally to complete their tire education is *growing less and less every season*.

The United States Rubber Company has always stood for a *wider spread of tire knowledge* among motorists.

Doing everything it could

to encourage them to greater *care in tire selection*.

Firm in the belief that the more they know about tires, the *quicker* they will come to *quality*.

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Back of the *legitimate dealer* who sells *legitimate tires* stand all the weight and influence and responsibility of the United States Rubber Company—the *largest* and *most experienced* organization of its kind in the world.

Go to him when you want a tire. For that way—and that way only—lies *economy*.

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Two hundred and
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Banking Fancies—and the Facts

An answer to Frederic Howe's outcry that Wall Street controls the banking system of the country and that the money octopus has got us in its clutches

By GEORGE E. ROBERTS

Vice-President of the National City Bank of New York

THE EDITOR of THE NATION'S BUSINESS has asked me to comment upon a series of articles upon the banking business as conducted in this country, written by Frederic C. Howe, which has been appearing in a weekly publication called *The Organized Farmer*. Dr. Howe is thus introduced to its readers by the editor of that paper:

WHO IS FREDERIC HOWE?

As the leading article in this issue you will find, commencing on page 2, an article entitled "Banks for Workers and Farmers," by Frederic C. Howe, and it is but natural that you will want to know whether the man who writes on so important a subject is entitled to speak on it. Dr. Howe has been commissioner of emigration of New York, and before that a director of the People's Institute at New York. He was associated with Tom Johnson, mayor of Cleveland, in his campaign to get municipal operation of the street car lines of that city. He has been a member of the senate of Ohio and studied banking and finance at home and abroad. He has been a lecturer in the Universities of Wisconsin and California and is an acknowledged expert on cooperation. All told he is well versed in all matters pertaining to the welfare of the common people and the article is well worth reading and thinking about.

Loose Thinking, Loose Writing

THESE statements about Dr. Howe's office-holding career and the appointments he has held as a teacher in educational institutions are true and that is the most significant thing about these articles. They reveal the kind of thinking that a restless, speculative type of mind may do if isolated from practical affairs.

His theme was the need for cooperative banks in this country, similar to some of the institutions for making small loans that have grown up in Europe. I have nothing to say against cooperative banks. I believe in the principle of cooperation everywhere. It is the basis of all our social life. I would like to see the spread of a system of credit institutions organized by wage-earners and others who are not accustomed to the use of existing banking institutions; to accumulate savings, use their combined credit and gain experience in business affairs.

But Dr. Howe devotes little space to the proposed institutions, his articles consisting of an attack on existing banks. The charges are not new, but by repetition and emphasis they undoubtedly have imposed upon many people of limited knowledge in business affairs.

His general indictment is that the local banks all over the country are controlled by the big banks of the financial centers, that the local deposits are gathered up and taken to the centers for speculation and investment, while the local industries are starved for want of banking accommodations. To quote his own language:

The industrial classes have no credit at all. And the producing classes are but little better off. There are banks enough; every small town has from one to three banks. And they

are bulging with deposits. But these deposits are not available for the producing classes. They are used for something else.

In a generation's time, banking has changed from a local to a national system. It has many qualities of a nation-wide monopoly. And as a result of the great war, the smallest bank in the country has become a part of an international banking monopoly. It is a sucker, a feeder, a little sponge that draws to itself the resources of the country, the village or the town, which resources in turn can be used by the big exploiting banks of New York.

It is the man farthest down who needs credit most. Yet the bankers will not supply it. They prefer to send their money to Wall Street; to use it to aid speculators, packers, middlemen, or for other commercial and speculative purposes. America has no banks that help the man without capital, the man with a little capital, or even the farmer in need of credit for productive purposes.

In the midst of this savage onslaught, Dr. Howe pauses to tell how easy it is to start a bank. After giving a history of the national system and describing the process of obtaining a charter, he says:

State banks are chartered under state laws. Anyone can organize a bank just as he can organize a store. And most of our states permit the organization of banks, provided the bank has sufficient capital and the incorporators are men of standing and substance in the community.

This is true. Banking is as open to competition as any business can be, and there are about 30,000 banks in the country. Only \$25,000 capital is required to start a national bank, and nearly one-half of the national banks have only that amount. Dr. Howe goes on to show that no exceptional talent or secret methods are required to run a bank:

We are made to believe that banking is a very mysterious business, so mysterious that it cannot be understood by ordinary people. It can only be carried on by highly trained experts, familiar with Wall Street operations and intricate business transactions. This is not true! Banking is an easily understood business. It can be carried on with conservative management at very little risk.

It is pathetic to be told that somebody has imposed upon Dr. Howe's credulity, but it seems more probable that the mystery which has enveloped and distorted the banking business in his eyes was of his own creation.

Having been disillusioned to this extent he proceeds to show just what a snap the banking business is. He points out that the banker does business on other people's money:

Here, then, we have the essentials of banking. It consists in receiving other people's money, and in lending it out again to the people who deposited it. That is how banking differs from other business. The banker really borrows the depositor's money, usually for nothing, and then lends the same money back again at from 4 to 10 per cent interest.

Bankers use other people's capital. This is the reason why banking is so profitable. They supply a portion of the capital themselves in

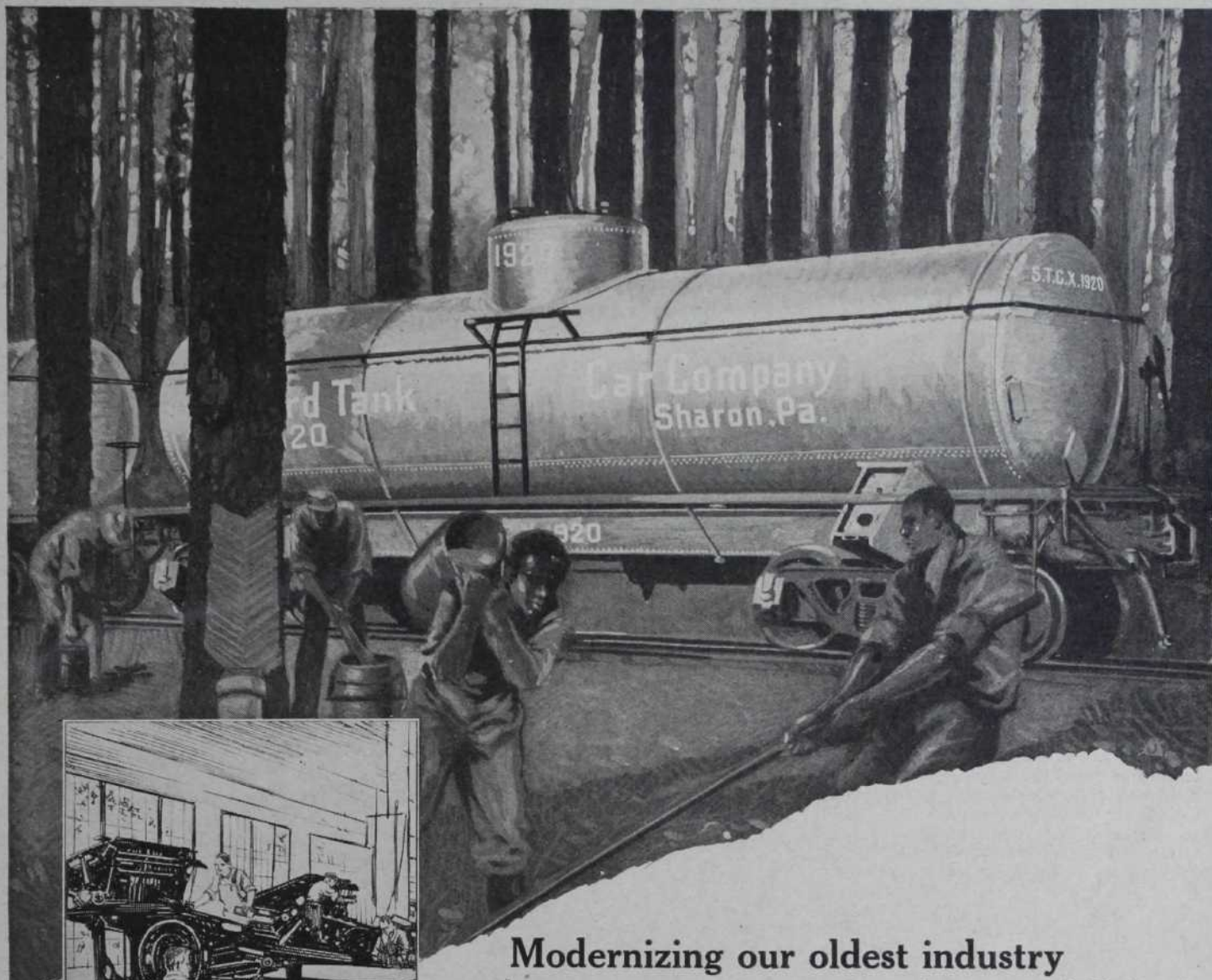
the capital stock of the bank which they have subscribed. But almost all the money they have to control is the money of other people, placed in their hands for safekeeping.

It appears from Dr. Howe's own statements that it is about as easy to start a bank as it is a creamery, that the conduct of the business requires nothing but good, ordinary business sense, and a local acquaintance, and that the banker, instead of occupying a dominating position in which he may safely be as arbitrary as he pleases, is really dependent upon the local community for the funds with which he does business. But he asks his readers to believe that the banker refuses to grant loan accommodations to his own customers and his own community and sends all the money to New York for the bankers of the metropolis to use!

The reports of the comptroller of the currency supply a complete refutation of the charge that the deposits of the local banks are drawn away to New York or other centers for employment. Suppose we take what are classified by the comptroller as the "middle western states," Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa and Missouri. The comptroller's report for 1919 has a table (page 182) which shows that the total assets of all the banks of these eight states, including those in both state and national systems, on June 30, 1919, were \$11,833,417,000, and another table (page 86), which shows that the amount of their deposits with the national banks of New York City on December 31, 1918, was \$168,326,967. The dates are not the same, and the deposits with the state banks and trust companies of New York City are not given, but the different dates do not affect the figures much, and although the deposits in state banks and trust companies are important, they are certainly less than those in the national banks. But if we allow that the state banks and trust companies of New York City have as much on deposit from these states as the national banks have, the aggregate would be only about three per cent of the banking resources of the states named!

Money Goes West, Not East

IT MUST be understood that funds naturally accumulate temporarily in the New York banks from all parts of the country, because New York is the chief clearing center for both domestic and foreign trade. The movement of products creates credits in the centers against which the owners are continually drawing. The books of a New York bank will show a continual process of crediting and debiting. The deposits of the National City Bank of New York are turned over, or checked out, on an average of about fifty times a year. It is simply the fact that with its thousands of customers the average amount of deposits remains approximately the same that enables the bank to make any use of these active funds. It is the mistake of a person unfamiliar with the banking business to think that all the



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deposits in New York banks to the credit of the interior represent cash deliberately sent there. For the most part they represent collections. All told, the credits of the interior banks at New York are an insignificant percentage of their assets and always have been.

So much as to the deposits in New York City of the banks of the eight states mentioned above. Now let us see how much money they loaned outside of these states. The aggregate of all loans held by all the national banks of these eight states on June 30, 1919, (exclusive of notes and bills re-discounted) was \$2,678,576,000, of which \$1,539,477,000 were by banks in the reserve cities and other cities of over 50,000 population, and the remainder by the banks in smaller cities and towns. The comptroller's report does not show where the latter loans were placed, but it gives a table (p. 84) which shows the amount of the former loans placed in each of the seven divisions of territory which the comptroller uses. The loans of these national banks in the 32 reserve cities and cities of over 50,000 inhabitants were distributed as follows:

LOANS OF BANKS OF 32 MIDDLE WESTERN CITIES

In New England States.....	\$10,929,372.10
In Eastern States.....	55,281,354.54
In Southern States.....	67,933,305.27
In Middle Western States.....	1,286,472,586.04
In Western States.....	102,296,281.93
In Pacific States.....	21,258,848.55
In Alaska, Insular Possessions and foreign countries.....	5,814,499.17
Total.....	\$1,549,986,247.60

The comptroller did not inquire where the \$1,138,899,000 of loans by banks in the smaller cities and towns were placed, probably because he was satisfied that the amount loaned outside their immediate communities was inconsiderable, and it is safe to assume that this is the case, in view of the showing for the banks in the 32 cities. It will be seen above that 83 per cent of the loans of the latter were made in the middle western territory, with 17 per cent elsewhere, and that in a total of \$1,549,986,247.60 only \$55,281,354.54, about 3½ per cent, were made in all the territory included in the "eastern states" group, which is composed of the states of New York, New Jersey, Pennsylvania, Delaware, Maryland and the District of Columbia. If we figure the percentage upon the total loans of the middle western district, \$2,678,576,000, it would be about 2 per cent.

Furthermore, if we turn to the loans of the national banks in the same class of cities of the "eastern states" group, we find them to have been placed as follows:

LOANS OF BANKS OF 31 EASTERN CITIES

In New England States.....	\$101,157,632.65
In Eastern States.....	2,513,354,497.80
In Southern States.....	210,240,171.74
In Middle Western States.....	310,517,747.01
In Western States.....	45,349,562.14
In Pacific States.....	39,551,604.92
In Alaska, Insular Possessions and foreign countries.....	70,928,615.41
Total.....	\$3,291,999,831.67

These two tables show that while the national banks in 32 cities of the "middle western states" were lending \$55,281,354.54 in the "eastern states," 31 national banks of the latter states were lending \$310,517,747.01 in the former states. And the date named, June 30, is not in the season of the year when the loans of the central cities to the country are at the highest point.

It may be added that the loans from one section of the country to another, and par-

ticularly from the interior banks to the centers, consist largely of what is known as "commercial paper," sold by brokers and representing borrowings by business houses of high standing. It is a common practice of banks in all localities to carry a moderate line of such paper as a secondary reserve, counting that it will be paid when due without request for renewal, whereas they cannot tell how much local paper they may be called upon to renew.

These tables show the utter falsity of Dr. Howe's representations. There are no figures to support Dr. Howe's charges. He made them without looking for any support.

Here is another quotation:

The trouble with banking is that it has passed under the control of the speculating and exploiting banks of New York, Chicago and the big cities. These big city banks often own stock in the smaller banks. This is one of the evils disclosed by the Pujo Investigating Committee of Congress in 1913. It showed that J. P. Morgan & Co. and the National City Bank of New York had reached out and bought stock in and secured control of the inland banks. This is one evil. It lies back of and explains other evils. Our banking agencies are controlled by Wall Street.

Dr. Howe names the National City Bank of New York as one of two New York banks which have been the worst offenders in reaching out and securing control of "the inland banks." His language throughout conveys the idea that an important part of the banking resources of the country has passed under the control of the New York banks. The largest number of banks outside of New York City in which the National City Bank of New York ever at one time, directly or indirectly, was interested was eight. In none did this interest amount to control. In but one, a bank of \$1,000,000 capital, not in a commercial city, was there an interest approaching, although under, 25 per cent. The second largest interest was in a bank of \$10,000,000, where the holding was \$100,000—1 per cent.

You Couldn't Call It Control

IN ONE of the others, a small institution, its interest was 5 per cent, and in no one of the other five did the affiliated interest exceed 2 per cent. Of course it is absurd to speak of these share-holdings as dominating these banks, to say nothing of dominating the banking situation in the United States. And that is as much as there ever was in the cock and bull story that New York controlled the interior banks.

The interlocking bank directorates, which were made much of in the Pujo report, were of small significance. They were insignificant in number, and still less so in influence. One case may be described as an illustration: Joseph T. Talbert began his banking career as office boy in a little bank at San Angelo, in the Panhandle of Texas. He had ability and as a young man moved up to an official position in The Farmers and Mechanics National Bank of Fort Worth. Then he got an appointment as a national bank examiner, and for some years covered the middle western territory, from Texas to the Canadian line, gaining a wide acquaintance and thorough knowledge of banking and business conditions in that region. He then became an officer and member of the Board of Directors of the Commercial National Bank of Chicago, where he remained some years, until the National City Bank of New York, wanting a man who had an intimate knowledge of the west, persuaded him to move to the metropolis. The Chicago bank,

mindful of his many friends throughout the west, continued him as a member of its board, so that he thus became one of the interlocking officials who have been described as effecting a monopoly of banking facilities. In fact, the whole arrangement illustrated, not the power of wealth, but the value of personality.

The appearance of well-known names upon banking directorates often has a similar explanation, particularly where the banks are in distant cities. A name that ranks high in the business world, and is widely known, in some instances abroad as well as in this country, or which is connected with a corporation that is widely known, has value. It is the value of character.

The True Significance

SOME people, like Dr. Howe, outside of the business community, on-lookers speculating about its activities, see nothing but a sinister meaning in these connections, the signs of conspiracy. As a matter of fact, these interlocking directorates signified nothing as to control of banking institutions, but rather the efforts of the banks to reach out for business. The banks of every city are interested first of all in their own city and immediate territory. The slightest knowledge of how a bank's business is built up would tell anyone that. The bank which did not put the needs of its own community above outside opportunities would soon cease to be an important factor in the local banking situation.

Dr. Howe's imagination plays on, as follows:

As a result of this monopoly of credit and banking, the industrial and farm life of America is under the control of a great banking syndicate in New York. The control is complete. Whoever controls credit controls the economic life of a nation. This banking syndicate owns or controls the railroads. It owns or controls the steel trust, the anthracite coal trust, the oil trust. It owns the street railways, gas and electric lighting corporations of our cities. It owns the electric trust and the water power trust. It reaches out to every state in the land, it is interlaced with the politics of cities, the politics of states, and the politics of the nation as well.

The banking trust uses the local banks in political campaigns. It uses the local banks to coerce advertisers, to coerce the press at times of elections. The New York city banks fight municipal ownership in San Francisco, Detroit, or Cleveland in this way. They fight legislation in the state assemblies.

This is how the politics of the nation are controlled by the banks. Especially by the banks of New York.

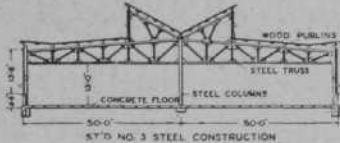
The money trust has become a political trust. It has become an opinion-making trust as well.

This is all interesting chiefly as showing what nonsense can be written. Part of the time it suits Dr. Howe's purpose to represent that the bankers own the corporations, and part of the time to represent that they have sold them at inflated prices to the people. Either they own them or they don't own them. As a matter of fact, the commercial banks, which hold the deposits of the people, have but slight proprietary interests in the railroads or industrial companies. The national bank act, and state laws also as a rule, forbid banks to own stocks, and the ownership of bonds gives no control. With total assets on June 30, 1919, of \$20,799,550,000 the total holdings of all national banks of bonds and securities other than government obligations was \$1,767,038,000, and the total of all loans secured by stocks and bonds was \$3,438,387,000.

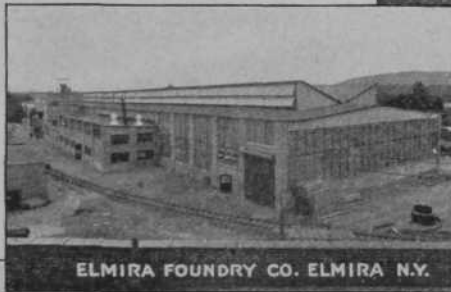
As to the relations between the interior banks and their New York correspondents, the



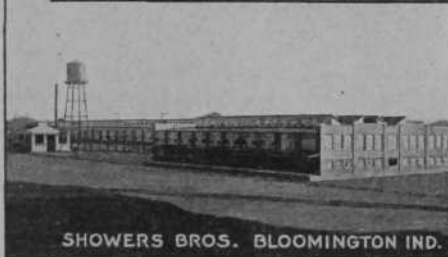
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"Is the application of the most modern ideas in foundry construction and operation."

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"After trying a Standard No. 3 at Bloomington, Ind., they ordered a new plant at Burlington, Iowa, which they advertise as 'America's Greatest Furniture Factory.'"

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"We consider this new plant ideally adapted to the making of bodies and final finishing of cars."

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Staten Island	50,000	
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STANDARD AND SPECIAL BUILDINGS

obligations are usually from the latter to the former, rather than the contrary, and the idea that the New York banks attempt to control the political policies of the interior banks is too silly for reply.

Dr. Howe has been reading about foreign loans, and comments as follows:

More recently the money of the farmer and the worker has been shipped abroad. Upwards of \$20,000,000,000 of credits and loans have gone out to Europe, South America, Mexico and China. The interest rates are high in these countries. The New York banks make immense commissions on loans, in addition to the interest which they receive. They sell the bonds of foreign countries and the stock of mines, railroads and plantations to investors. They make immense profits in this way. In this process the producing classes in America are starved for credit. We pay higher interest rates. We need the money at home. But it is being used for the exploitation or "development" of other countries.

When did these \$20,000,000,000 in loans or credits go out from this country? The investments of the United States in foreign countries other than Canada, Mexico and Cuba, were very small prior to the war, and the investments in these three countries were placed in only a few cases by New York bankers. They represent the natural movement of American enterprise into adjoining countries. Nothing like \$20,000,000,000 of foreign investments can be counted up, even including the credits granted to Europe during the war, of which nearly \$10,000,000,000 were granted by the United States Government to foreign governments. These credits represent the products of American farms and factories which have been sold abroad and for which the producers have received their pay from the institutions or persons now holding the foreign obligations. The producing classes as a rule have been benefited by the sale of these products, through the high prices and wages which the demand has created.

Consider Dr. Howe on farm mortgages:

Banks which should serve the producing classes are owned by the exploiting classes. They are used almost exclusively by the exploiting classes. They are used to build up monopoly, and when the monopoly has been built up, they protect it. Instead of aiding the farmer they injure the farmer. Very frequently they bankrupt him. They foreclose farm mortgages in bad times. This has been done all over Oklahoma and other parts of the west. This is one of the explanations of farm tenancy in the country. The banks own the farms. They get them through foreclosure.

There was a time years ago, following periods of railroad building and the opening of new territory, when much was said about low prices for farm products and farm mortgage foreclosures. Dr. Howe must have failed to take notice of what has been going on ever since in the farming districts. The average value per acre of all the farming land in the United States increased between the censuses of 1900 and 1910 by more than 100 per cent, and it is safe to say that the increase in the last ten years has been quite as great. Under these conditions mortgage foreclosures have been almost unknown. If Dr. Howe would make an investigation into farm tenancy he would find the chief explanation to be that the farm owners have moved to town and are living upon their accumulations and the rents. There may be a problem in farm tenancy, but it does not arise from mortgage foreclosures by bankers.

The truth about the banking business, of course, is that everywhere people who are sufficiently forehanded to have any use for

banks for depositing purposes are able to borrow in reasonable amounts. The depositors, to a great extent, are also the borrowers, and naturally have the first claim to accommodations. They create the funds. If there were no depositors there would be no banks, and if the depositing class use all the funds what right have the non-depositing

The Stumbling Block

By BERTON BRALEY

I'M the scorn of minds sulphuric of the esoteric critic

Of the little group that calls itself "Elect." Parlor Bolsheviks ignore me and the doctrinaires all score me

For the dogmas and the schemes that I have wrecked.

Long-haired orators attack me with the thought that they can hack me

Into pieces they are certain won't be missed,

While some proudly abstract thinkers put on philosophic blinkers

Which prevent them from observing I exist.

I am dull and unromantic and the theorists grow frantic

When they find they cannot conjure me away;

I'm the block on which they stumble, I'm the thing that makes a jumble

Out of all the airy visions they display. Though the lights of hope may beckon, I'm a thing that they must reckon

Or their science and their skill will not avail,

And their ships so proudly steaming to a port of which they're dreaming

Will be thrown in wreck upon me as they sail.

I am stubborn, heavy, leaden and the thought of me may deaden

Many notions that are glorious and fair, I'm a bore, I can't deny it, and I wouldn't even try it—

I am stolid, vulgar, tiresome, but I'm there!

You can sneer and you can flout me, but you can't get on without me,

Though you suffer with convictions most intense.

For your plan won't last a minute if you haven't got me in it—

I am nothing more or less than Common Sense!

I am nothing more or less than Common Sense!

I am nothing more or less than Common Sense!

I am nothing more or less than Common Sense!

I am nothing more or less than Common Sense!

I am nothing more or less than Common Sense!

I am nothing more or less than Common Sense!

I am nothing more or less than Common Sense!

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I am nothing more or less than Common Sense!

I am nothing more or less than Common Sense!

I am nothing more or less than Common Sense!

I am nothing more or less than Common Sense!

that the bank will be always in control of its resources and able to plan for the accommodation of its regular patrons.

It is safe to say that the banking business is usually conducted upon these principles. The banker who does not observe them will disappoint the patrons who supply the deposits and be unable to compete successfully with rivals who do observe them.

To sum up, the banking business is in its very nature cooperative, and is successful in the degree that this principle is observed. Even the cooperative banks of Europe, which Dr. Howe commends, confine their accommodations to members. Somebody must put something into a bank before anybody can get anything out. When a building and loan association, or a credit union of any type, begins business the first step is to provide for regular payments into the treasury. After these have begun to accumulate the organization is ready to receive applications for loans and their first obligation is to their members.

The charge that bankers are indifferent to the growth and prosperity of local industries presumes that they do not know their own interests, although they are confronted constantly with the fact that the prosperity of the community builds up the bank deposits. There is plenty of evidence that the bankers take a lively and helpful interest in the progress of agriculture. The American Bankers' Association for years has maintained an Agricultural Commission of five members to promote the systematic cooperation of its members in the improvement of agriculture.

In February, 1919, under the energetic leadership of the chairman of this commission, Mr. Joseph Hirsch, of the Corpus Christi National Bank, Texas, a conference was held in Washington, which was attended by representatives of thirty-seven state bankers' associations, and by the Secretary of Agriculture and numerous bureau heads, to consider how the bankers might most effectively cooperate with the department. In thirty-eight states the bankers' state associations have standing committees upon agriculture, and most of these committees are active, working bodies, constantly stimulating interest in the higher development of agriculture.

The 30,000 banks of the United States are owned in the communities where they are located, and usually by numerous stockholders. Each corporate bank has a board of directors of from half a dozen to two dozen members, who will certainly average to be as public-spirited citizens as others in the locality. It is a strange theory which represents these institutions as uniformly following policies injurious to local interests. It is an abnormal idea, repugnant and untrue.

It would be a mistake, however, not to recognize that the constant outpouring of such misrepresentations has harmful effects. It is the kind of writing which sets the world awry. Modern society is essentially and necessarily cooperative, and cooperation depends upon good understanding, good feeling, and mutual confidence.

Such writing inspires distrust and creates friction. It is like throwing sand into the bearings of machinery. The injury to bankers is a small matter in itself, but the result is to lower the effectiveness of the entire social organization, to decrease production and retard social progress, and the people who will be most helped by social progress are the chief sufferers.

It is not to be expected that perfect harmony will exist in human affairs, or that any of our institutions or methods will be above legitimate criticism, but the Howe articles are not criticism

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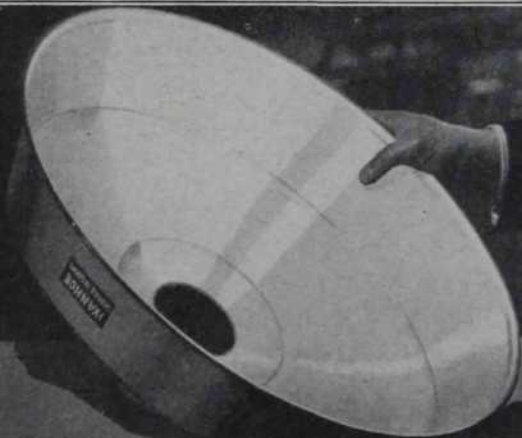
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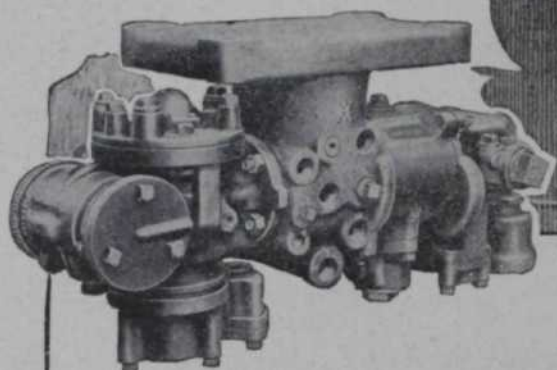


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Old Lands and New Trade

It is something of a shock to read about the Chamber of Commerce of Jerusalem; there is such a body and it is a manifestation of the awakening that came as the Turk went out

By **CHAUNCEY DEPEW SNOW**

Manager, Foreign Commerce Department, Chamber of Commerce of the United States

GREAT things are expected, especially by British merchants, as a result of the opening up for development of "the new trade basin of the Near East." The dislocation of the Turk, and the splitting up of the Turkish Empire into numerous racial and economic units, give promise of trade expansion which has not been possible under the Turkish regime.

American business men in France, when General Gouraud was designated Commander-in-Chief of the French forces in the East, were impressed by the attention to economic matters displayed by the general and the round of receptions accorded him by the Chambers of Commerce in various important trade centers of France, prior to his departure. A newly appointed commercial attache could have done little more to emphasize the trade promotion aspects of his mission.

A New Trade Basin

THROUGHOUT "the new trade basin of the Near East" the British are characteristically active. The Federation of British Industries has just given an industrial display of British-made wares in Greece, and the cable dispatches have recently mentioned the appointment of a trade commissioner of the federation with headquarters at Constantinople. In this connection it is, to be sure, gratifying to observe that American companies are giving new interest to the Near East, an interest that is being fostered by the American Chamber of Commerce for the Levant, with its main establishment in Constantinople and its increasing number of affiliated Chambers.

Perhaps the most curious, and, from many points of view, not the least interesting example of this awakening commercial impulse, comes in a document entitled "Constitutions and List of Members, 1919," of the recently organized "Chamber of Commerce and Agriculture of Jerusalem, Hebron, Bethlehem, Beth-Jallah, Ramallah and Districts," as turned out in Frumkin's Printing Office at Jerusalem. The list of functions of the Chamber set forth in the so-called constitutions comes somewhat as a jolt to the biblical student, or even to the average business man, who has associated these good old towns only with subjects quite apart from commerce. Judging from the original program, it will not be at all surprising to see future emanations from Frumkin's press on "The Garden of Eden Realty Development Corporation," "The Eden Apple Grower's

Exploitation Society," "The Bethlehem Rotary Club," or "The Jerusalem Export Round Table."

The listed functions of the newly organized Chamber are officially set forth as follows:

To intervene, as an advisory body, with the local government in all matters affecting the general interests of the district for commerce, agriculture and industry.

To assist in the arrangements of arbitration and conciliations in cases of commercial disputes, when requested.

To place local merchants in touch with British and foreign manufacturers and merchants, and vice versa.

To correspond with foreign Chambers of Commerce and similar bodies and private firms for the purposes of obtaining and giving information on the standing and reliability of merchants.

To deal with all claims, applications, suggestions, petitions, etc., of a commercial nature, whether of general or personal interest, made to the Administration. All such claims to be handed normally to the Chamber of Commerce, who will consider their validity, and, if they hold them to be substantial, will then put them before the Administration as recommended by the Chamber. The Chamber will deal, as a matter of course, with all claims made by members, and with all claims made by non-members when requested to do so by the Administration.

Mixed Membership

IT IS announced that the membership and subscribers will be drawn from "manufacturers, merchants, bankers, importers, and exporters, farmers and agriculturists, commission and insurance agents, established in Jerusalem, Hebron, Beth-Jallah, Ramallah and districts." The official language of the Chamber is English, but all reports are to be drawn up in English, Arabic and Hebrew. The Chamber is to have a sort of board of directors called a committee, consisting of twelve members, classified geographically, according to lines of economic activity and religion. It is specified that the Jerusalem representatives shall be "two Christians, two Moslems, four Jews and two officers."

The president of the committee is to be the Governor of Jerusalem, or his nominee, and provision is made for five vice-presidents, elected by the government. The secretary will be assisted "by a paid undersecretary speaking English, Arabic and Hebrew, or, in lieu of such a person, by two undersecretaries, one speaking English and Hebrew and one speaking English and Arabic."

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© Underwood & Underwood

A market-place in Jerusalem. Like other towns in what used to be the Turkish empire, the city of David is to have added facilities for an exchange of goods with foreign countries. The American Chamber of Commerce for the Levant with its main establishment at Constantinople is also showing activity throughout this entire territory.

To watch over and protect the general interests of commerce and agriculture of Jerusalem, Hebron, Bethlehem, Beth-Jallah, Ramallah and districts.

To collect information from foreign manufacturers and traders which may be useful for the development of commerce and industry. The Chamber of Commerce has the power to form a special branch to deal with the promotion and encouragement of the agriculture of the country if it be found to be desirable at some future date.

To establish means whereby the transaction of business may be facilitated.

To encourage and promote new commercial, agricultural and industrial enterprise in Jerusalem, Hebron, Bethlehem, Beth-Jallah, Ramallah and districts.

"Well, Dan, no
Sherlock Holmes
is needed to find
the quality
printing in that
folder!"



PRINT it on the



"I have it, Watson!"

Leaning forward with his long thin forefinger tapping the folder held in his left hand, my old friend Holmes continued eagerly—

"There's no real mystery about this case. Like most problems, it yields readily to careful reasoning and analysis.

"You know, my dear Watson, although the printing situation has become uncommonly acute, many business houses are still working along the old established lines, and so have to accept the excuses, annoyances and delays too often incident to the production of printing, and to swallow their indignation, while many times paying prodigious prices for the finished job.

"But these people are different. They sensed a market condition that meant big money to them if taken advantage of at once. But to do so they must get out sales literature over-night. And, Watson, that's exactly what they did.

"When their travellers called on the trade two days later every purchasing agent knew all the facts, and Messrs. Salesmen could devote their entire energies to landing the orders. Result—a magnificent clean-up, with all their competitors wondering how it was done.

You know, Watson, quick work like that would be impossible with the old printing methods. There is only one possible solution—this job was printed on the Multigraph."

A Clue! It Prints!

There's a fine clue for you,

brother. And if you follow it promptly, it won't require any great amount of sleuthing to run to earth dozens of ways the Multigraph can help you turn the trick.

When you think that the Multigraph prints, actually PRINTS, from real type and printer's ink, in colors and with illustrations, if desired, such a wide variety of business helps as—

Office forms	Cards
Office stationery	Notices
Factory forms	Imprinting
Tags	Typewritten form letters
Labels	Printed form letters
Wrappers	Illustrated form letters
Stickers	Restaurant menus
Sales bulletins	Theatre programs
House organs	Bank checks
Booklets	Deposit slips
Pamphlets	Order blanks
Circulars	Subscription blanks
Folders	Price lists
Dodgers	Statements
Blotters	Memorandum pads
Small posters	Post cards, etc., etc., etc.

—when you've read this list you begin to have some idea of how it can be used by a live business man like yourself.

Inside Stuff! It Prints!

Of course you'd rather have "inside stuff" applied to your particular business—and that's exactly what you can have. One of our representatives will be glad to give you complete information, not mere generalities but facts and figures covering exactly your problems.

He'll show you how the Multigraph will save 25% to 75% on every one of your printing jobs—except the big complicated ones. That it will save time (and that means money) in every department in your business by cutting out all the delays caused by inability to get necessary printed matter to carry through the work.

He'll show you how the Multigraph will save salesmen's time by doing the missionary work for them. That it will help them—and you—to earn more money with less work.

How it will help you keep your trade, your sales force, and your entire organization posted, interested and enthused—and that means money, doesn't it?

The Real Dope! IT PRINTS!

And you'll learn that the Multigraph is not merely a duplicating device, but an honest-to-goodness, rapid rotary printing press, which occupies small floor space, and does not turn your office into a printing plant.

That in addition to printing it turns out more and better multiple typewritten letters than you can get any other way. That the equipment includes an easily-operated typesetter, that sets typewriter and several other type faces.

But you want a personal story tied up tight to your business, don't you? Then why not ask for it?

You can't buy a Multigraph unless you need it

THE AMERICAN MULTIGRAPH SALES CO., Cleveland, Ohio

Offices in Principal Cities

THE INTERNATIONAL MULTIGRAPH CO., (Britain) Limited, 15-16 Holborn Viaduct, London, E. C. 1

THE INTERNATIONAL MULTIGRAPH CO., Paris, 24 Boulevard des Capucines

THE MULTIGRAPH SALES CO., Ltd., 84-88 Bay St., Toronto, Canada, Offices in Principal Canadian Cities

MULTIGRAPH

THE MULTIGRAPH SENIOR

This is a complete, compact equipment that turns out high quality printing and form typewriting at very low cost—averaging a saving of from 25% to 75%. It is simple and easy to operate; rapid and convenient. Electrically driven, with printing ink attachment, automatic paper feed, signature device, automatic platen release and wide printing surface.

THE MULTIGRAPH JUNIOR

This is a wonderfully efficient equipment for concerns which have a limited amount of work. It does both form typewriting and office printing and produces the same high quality of work as the Senior Equipment, but it is hand-operated only and cannot be equipped with electric power, automatic feed and signature device attachments, as can the Senior.

The Multigraph

1818 E. 40th St., Cleveland, O.

"Inside stuff" and the "real dope" about the Multigraph are just what I'm looking for. Tell me more about how it PRINTS.

Firm _____

Our Line is _____

Name _____

Official Position _____

Street Address _____

Town _____ State _____ Nat. Bus. Ctr. _____

The Somber Black Disappears from the Business Map and Industry Confidently Faces the Future

By ARCHER WALL DOUGLAS

THE MAP of general conditions has nothing black in its entire composition. "Fair" and "good" are the only shades, with "good" forming about 60 per cent of the total. There has been no such map since 1906. The overflowing harvest lies at the root of this wonderful showing, since it more than compensates for the doubt and hesitation now characterizing some phases of industrial life.

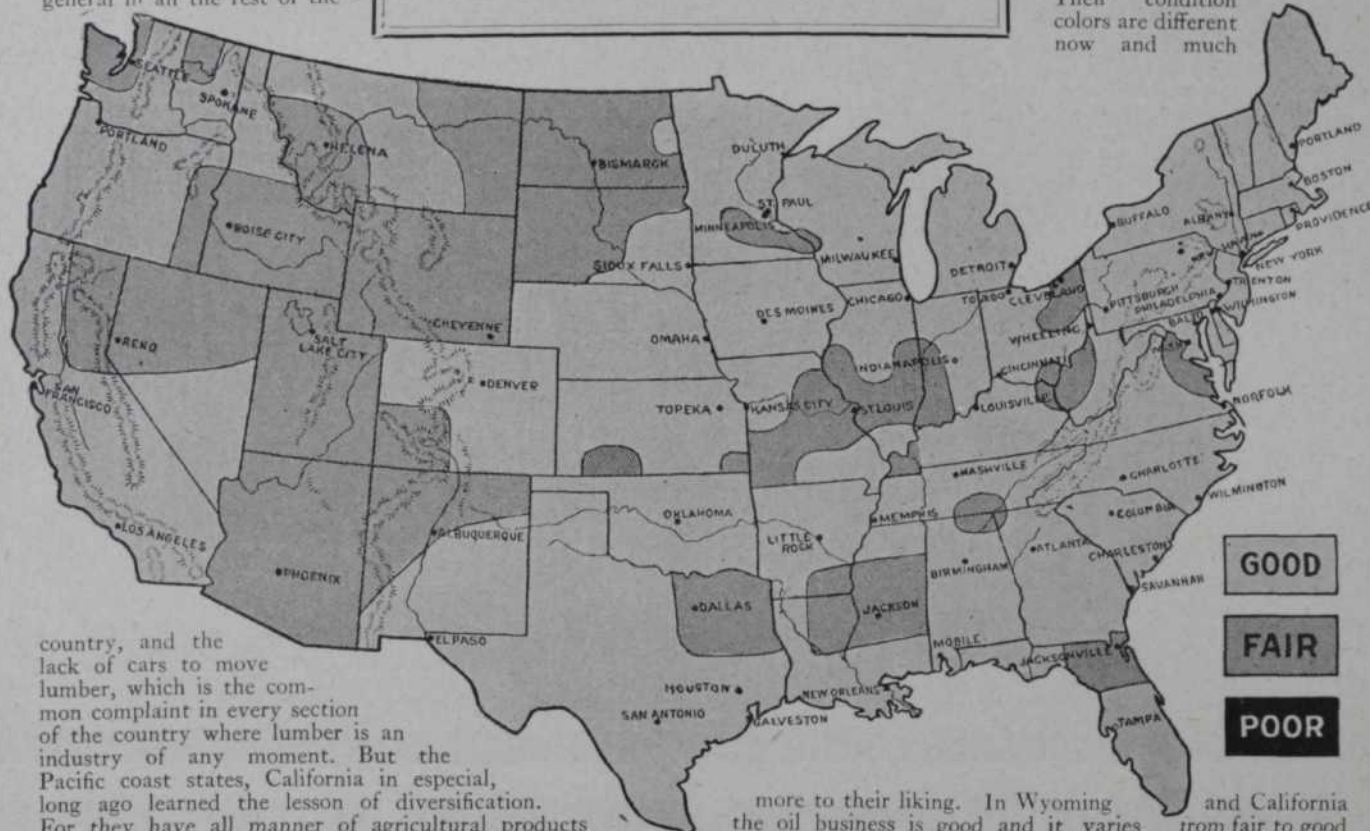
The story begins on the far-away Pacific coast, where "good" predominates despite the drouth which still afflicts much of California, the decline in ship-building, which is general in all the rest of the

Business Conditions, September 11, 1920

THE MAP shows at a glance the general condition of the country. It is prepared by Mr. Douglas as a weather map of business. The light areas indicate promising crops, industrial activity, the creation of new needs in home, shop and farm—in a word, "high pressure" buying markets. In the black areas these conditions are lacking, for the time being. The shaded areas are "half way."

alike of gold, silver, copper and zinc wherever mined. Lead is somewhat better because of recent brisk demand.

A generation ago to have talked about the agricultural products of Arizona, of Utah, of Colorado, of Idaho, was to discourse of things that mostly were not. Yet today they are matters of real moment, and are doing much to offset the unsatisfactory condition of the other industries. This is especially true of those portions of Montana, Wyoming, and the two Dakotas which suffered so severely a year ago because of fierce, prolonged drouth. Their condition colors are different now and much



country, and the lack of cars to move lumber, which is the common complaint in every section of the country where lumber is an industry of any moment. But the Pacific coast states, California in especial, long ago learned the lesson of diversification. For they have all manner of agricultural products for their reliance, and likewise they ship fruits and vegetables in countless carloads to the eastern states.

In California the citrus industry is the brightest spot in a situation where rainfall has been lacking and where there are fears that the mountain streams may consequently fail in sufficient water for irrigation. Eastward across the snowy summits of the Cascades and Sierras the mountain states have likewise learned not to rely solely upon their flocks of sheep and the cattle upon a thousand hills. For everywhere in the United States prices of wool are low and demand has almost ceased.

Nor is the cattle situation much better. It is true that the flocks and herds are generally in good condition because of sufficient rainfall on the grazing ranges, but prices are low and unremunerative at present high prices of feed. There is one exception to this, and it is the dairy business, that of contented cows, for whose product the demand seems unsatiable in every section of the country. This, too, despite the high price of feed.

Mining almost universally suffers from high cost of production, low cost of ore, and a possibility of supply that is not matched by an equal possibility of demand. This is true

more to their liking. In Wyoming and California the oil business is good and it varies from fair to good throughout the entire country.

Prices are high, production still keeps up, and there is a world-wide demand which seems difficult to satisfy. The only fly in the ointment is the absence of "wild catting," because of contraction of credit by the banks with consequent slump in the demand for those commodities and supplies which this form of development and adventure demands. This is felt particularly in Texas, where wild catting was the most engaging of pursuits, with all sorts of possibilities in both directions.

Still further eastward across the towering Rockies, conditions in the great plains states are about evenly divided between fair and good. In the northwestern states, spring wheat did not fulfill its early promise because of black rust and drouth here and there. But it is still a good yield save in some sections. And in general there was an abundant harvest and plenty of food for both man and beast. There will be more flax than last year, more sugar beets, large crops of corn, and much more hay and forage. There will be also more Kafir corn, more alfalfa, more Sudan grass. All these things should help to solve the live-stock problem by reducing the cost of production and

THE TONAWANDAS



Cheap and Certain Power



In the Heart of America The Tonawandas

1. The Chief Marine and Rail Gateway between the Great Lakes and the Atlantic, and between the United States and Canada.
2. Reliable, and cheap electric power from Niagara.
3. Superior labor supply, with open shop the rule.
4. Within 12 hours' ride of 70% of United States' and 80% of Canada's population.
5. Basic raw materials and diversified manufacturing within or close to the community.
6. Progressive living and working conditions; center of rich agricultural and fruit belt; equable climate.
7. The billions of financial resources of the Buffalo-Niagara Frontier District.

Gentlemen:

If your plant was located at The Tonawandas lowest-cost-electric-power in the world would be available.

The certainty of Niagara's flow means every day all-year thru dependability; the elimination of shut downs due to power failure; and lastly, ample power for future extensions.

The remarkable steadiness of this power helps insure highest quality products and facilitates maintaining maximum productive speeds.

All the other factors entering into manufacturing and selling are *right* to insure the utmost return on your invested capital.

Let us send you the complete facts.

Very truly yours,

CHAMBER OF COMMERCE OF THE TONAWANDAS



**Send
For
This
Booklet**

Cut out this corner as a reminder to write for Free Illustrated Booklet on the Tonawandas. Please use your letterhead.



When Minutes Meant Lives

FROM our Army in France came a call for a light and mobile X-ray outfit. Those we had, and those the Allies had, were heavy, complicated and fragile. It would mean life to American soldiers if their wounds could be examined immediately, on the field, instead of in the hospitals to the rear.

The problem was given to the Research Laboratories of the General Electric Company, and the facilities of MAZDA Service, which include the knowledge and experience and technical skill of scientists and engineers, quickly developed the X-ray outfit needed. Incorporated in it was an X-ray tube of new and improved design, by virtue of which cumbersome auxiliary apparatus was eliminated.

The engineering skill of allied industry, of Army officers, and of roentgenologists was called upon to complete the outfit, and in an astonishingly short time these units, truly portable, were being shipped to France. The new X-ray outfit did work with one tube for which other machines required a variety of tubes. Further, it weighed less than half as much, and was three times as powerful as the best field equipment then available. This outfit was made

standard by the United States Army, it was used in the fields, and it replaced more intricate apparatus in many of the base hospitals.

The way of its production was this—MAZDA Service is responsible for the present efficiency of the highest type of incandescent electric lamp, the MAZDA lamp, and there is no type, shape or size of bulb or filament that has not been made and tested in the Research Laboratories. The X-ray tube, the vital part of the outfit, is a younger cousin of the incandescent lamp. To the making of this tube were brought to bear a unique knowledge of bulbs and filaments, an unequalled laboratory and manufacturing equipment, and the technique of the chemists, physicists, metallurgists and engineers of MAZDA Service. These men triumphantly and swiftly solved the difficult problems of development and manufacture.

The portable X-ray outfit forthwith went overseas to save American lives.

The facilities of MAZDA Service produced it when the need came, and humanity is richer for its possession.

RESEARCH LABORATORIES OF GENERAL ELECTRIC COMPANY

MAZDA

making it more remunerative, even at the lower prevailing prices.

At this writing, a fine prospect for cotton is clouded and made uncertain both in Texas and Oklahoma, by too much precipitation and consequent damage by boll weevil. This same condition prevails all across the southern portion of the cotton belt to the Atlantic ocean. The amount of the final cotton yield depends much upon the weather in the next three weeks. Only out in Arizona and California is there no question of a yield considerably larger than last year. Incidentally, New Mexico is getting into cotton raising by irrigation. Yet when all the sum of possible disaster by too much rain and by early frost has been summed up there seems the strong likelihood of a crop which will be equal to all our needs with a liberal amount left for export.

Also in the great plains states the car shortage evil is far-reaching and starts in first with the fact that all the elevators are full of grain and cannot take any more. The next step is that they cannot get any more cars to ship this grain. Farmers with their wheat march up the hill, like the king of France, to the next railroad town, and then march down again because there is no place for their wheat. So they store it the best they can on the farm, and often have no place to put it. And then if they have to meet obligations they sell their wheat for what they can get for it. And a consequent lower market prevails.

Such is the widening circle of trouble in our complex economic system when just one thing goes wrong.

There was not much early fruit from Kansas southward because of the frosts and freezes in the late spring. But there are a good many apples and lots of watermelons. Raising watermelons for a living is not strictly an horticultural pursuit, but rather playing tag with fate who often uses loaded dice in the sharp, cold, wet weather that makes the fruit absolutely unsalable. The wide and startling range of prices in these melons is

often due to equally wide ranges in temperatures. For this luscious fruit commands a premium in hot days and cannot be given away with a pound of tea when the temperature drops.

Coal mining in the great plains states is in its usual condition of few days (of work) and full of troubles. In some localities it is better where mines have resumed operations. But too often there is the wearisome story of constant and apparently unnecessary strikes. Meanwhile, iron mining in Michigan and Wisconsin is well employed. The central west, between the Ohio river and the great lakes, the Mississippi river and the Alleghenies, is in most excellent shape on the whole. The crops are very good with the usual local exceptions. There is plenty of fruit and an abundance of garden truck.

Industrial life is very busy, save that a cloud has appeared on the automobile horizon. But it seems to presage very definitely lessened production in the near future, and probably different and more economical methods of distribution. Everything in the way of fabricated metals is full of business, and so are drugs and chemicals and woodenware. The great demand for concrete roads is making cement and paving brick almost unobtainable. There is a lot of tobacco being grown in the central west and in the south. But prices of some varieties are lower, and unsatisfactory to the growers.

The southern states are again giving evidence that they are peculiarly the land of opportunity. The traveler through them sees flocks and herds and fields of growing grain in sections that a generation ago knew only one-crop ideas and methods. There will be more sugar cane and rice than last year, and plenty of grains and forage. There is much fruit and an endless amount of vegetables. Turpentine and naval stores, and phosphate mining are doing much better now that the war is over, and the avenues of export trade reopened. The lumber business would be better if only cars could be had.

Building construction is much the same

there as in the remainder of the country. It has practically come to a standstill because of being tied hand and foot by high prices and the unreliability and uncertainty of labor, high prices and scarcity of material, and the almost impossibility of financing any construction. The Sister Anne of Hope is sitting upon the housetop of Expectancy scanning the distant horizon for that little cloud of dust which shall announce the stability of labor, the lowered costs of construction, the possibility of getting building material, and the loosening of credit, that are needed for the resumption of activity in this great and important industry.

There are many valuable minor crops now growing in the south, peanuts and pecans for instance, which are samples of the continued diversification in agriculture. Industrial life is very active save in textiles where lessened output and some shut-downs are noted.

This same condition prevails in this industry all along the Atlantic seaboard into New England. It is shared to an extent by some of the manufactures of leather. Furniture making is good. Manufacturing is generally good throughout the middle states and New England. This is true likewise of crops in these sections.

Sentiment as to the immediate future of business is much of the same tenor throughout the country—conservatism and caution prevail, yet only here and there displaying any apprehension. There are only a few minor discords of fear as to any serious cataclysm. There is entire realization and belief that the peak of high prices and business activity is past, but the general sentiment looks to a long drawn out and somewhat painless readjustment. Purchasing is liberal enough, but on a sane and sober basis of needs and not speculation.

There is general forecast of good business for the remainder of the year, also there is a fearless and good-sportsmanlike facing of the future and its many uncertainties and responsibilities.

Log of Organized Business

Steps that must be taken to join the International Chamber of Commerce—The Growth of Organized American business in the Orient—Visitors from Foreign Trade Bodies.

NUMEROUS requests for information respecting the procedure necessary for obtaining membership in the newly created International Chamber of Commerce are reaching the offices of the Chamber of Commerce of the United States at Washington.

The constitution of the new organization, the National Chamber explains, provides for two classes of membership—organization and individual. The annual dues of both classes of members is fixed at 300 francs, except that in the case of organizations this fee is used as a basis and is a minimum charge for organizations entitled to only one delegate. An additional fee of 500 francs is charged for each additional delegate. In general, the number of delegates to which an organization is entitled is fixed on the basis of one delegate for each 200 members of the organization, the minimum in all cases to be one and the maximum number of delegates ten.

Organization members will comprise national and local commercial, financial and industrial organizations representative

of the interests they embrace. They must not be conducted for individual profit or for partisan purposes. Associate members will consist of individuals, firms and corporations.

American organizations, firms and corporations seeking membership should submit their applications through the Chamber of Commerce of the United States.

Foreign Delegations Invited

THE Foreign Commerce Department of the Chamber of Commerce of the United States is endeavoring through proper channels to see to it that the National Chamber gets promptly in touch with important delegations of business men and individual business men coming to the United States from foreign countries. In this connection letters have been sent to American Chambers of Commerce in various foreign countries and to commercial attaches of foreign governments in Washington asking them to keep the National Chamber informed of foreign delegations coming to the United States. The

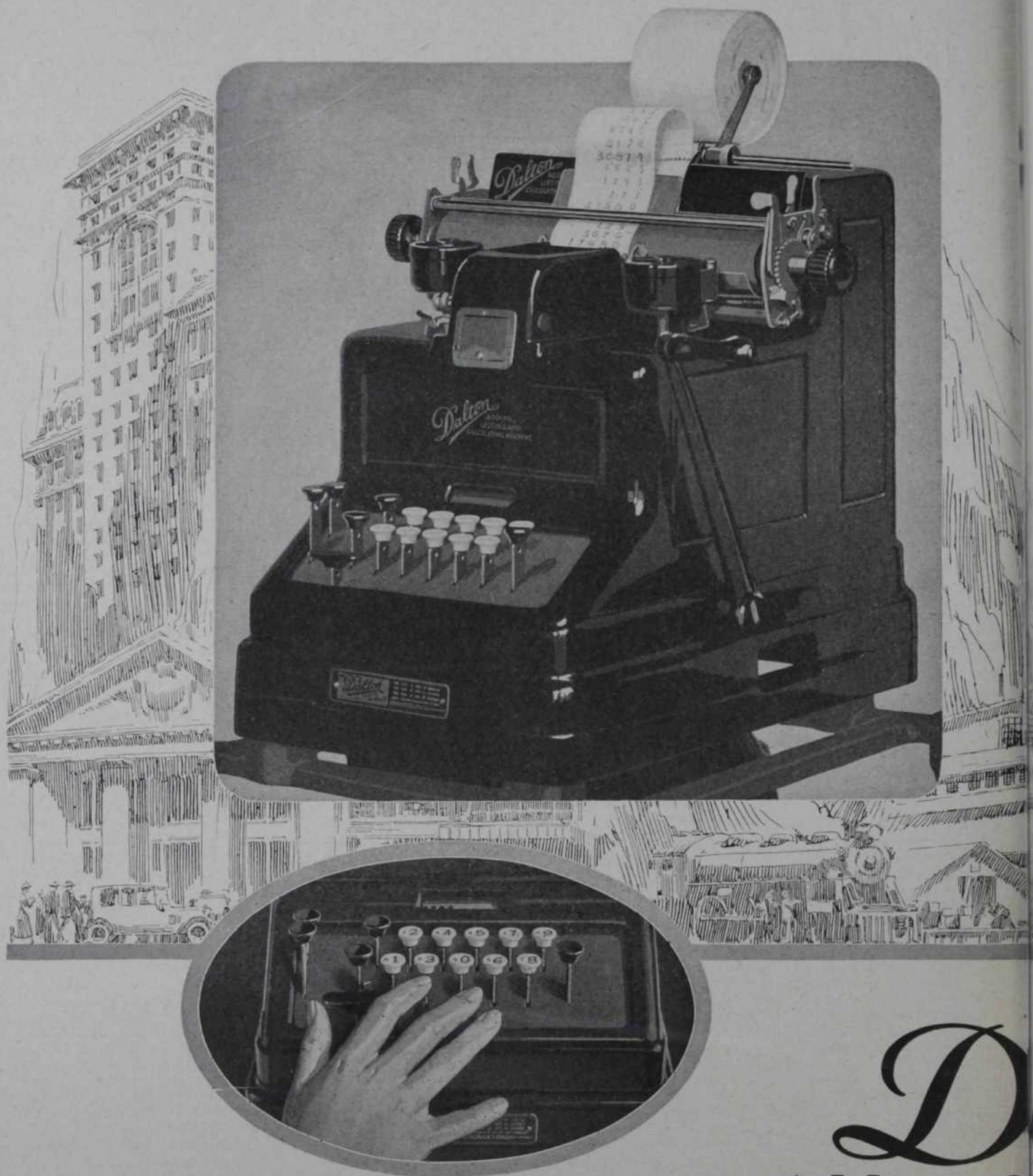
National Chamber has been assured of the cooperation of the United States Department of Commerce and the State Department in this work.

Chambers in the Orient

THE increased interest of Americans in China, brought about largely during the war, has resulted in the establishment of a number of American Chambers of Commerce in China. There are now regularly organized Chambers at the following points: Shanghai, Tientsin, Peking, Hankow, Harbin, and Changsha. There is another chamber at Vladivostok. Siberia is in process of organization.

The oldest chambers are at Tientsin and Shanghai, the leading ports of North China. Both were organized soon after the outbreak of the war when American merchants in China found themselves at the mercy of the various war regulations and restrictions of the belligerent countries. The real community of interest and the value of presenting

Bringing Simplicity and



D
Adding-Co

Speed to the Figure Work of Business

10 keys only—the foundation upon which Dalton simplicity is built.

25 to 40 per cent greater figuring speed—this is the record of the Dalton in actual service.

Having fewer keys, it is simpler and easier to operate. For the same reason, there is less chance for error incident to depressing the wrong key. Confusing column selection is eliminated—each figure is automatically placed in its correct numerical order, without thought or attention on the part of the operator.

Anyone, from the office boy to the chief executive, can use the Dalton immediately.

It is the *natural* "touch-method" machine upon which the fingers find the keys instinctively, without the aid of the eye. This enables the operator to keep "eyes on the work, fingers on the keys" and at the same time it eliminates eye-strain and brain-fag in that it saves during the day's work from 6,000 to 20,000 needless motions of eyes, head and hands—motions which are necessary on machines of the multiple keyboard "non-touch method" type.

This ease and facility of operation makes

the Dalton the fastest of all adding and calculating machines.

And with these advantages of *simplicity* and *speed*, comes also *versatility*. The Dalton is not merely an adding and listing machine, nor is it exclusively a calculating machine—it is an adding *and* calculating machine, which renders a double service at a single cost.

The Dalton adds, subtracts, multiplies, divides, figures interest, verifies invoices, cross-foots, tabulates, makes out statements, multiplies whole numbers by fractions, fractions by fractions, adds two totals at once, and performs numerous other mathematical calculations with a speed and accuracy that is almost beyond belief.

Dalton durability is established, and after-purchase service is available at all times to Dalton users everywhere.

Phone the Dalton Sales Agent in any of the 100 or more leading cities—have a Dalton brought to your store or office.

It will cost you nothing to have a demonstration. Or write—our folder contains facts about the Dalton which every business man should know.

THE DALTON ADDING MACHINE COMPANY

804 Beech Street, Norwood, Cincinnati, Ohio

Agents for Canada: THE UNITED TYPEWRITER COMPANY, Toronto and Branches.



Dalton

Calculating Machine

Dalton Advantages in Brief

- 1 One machine for all figure work
- 2 Instantly operable by anyone
- 3 Fewer keys—less opportunity for error
- 4 Keyboard scientifically arranged for "Touch-Method" operation
- 5 A faster adding machine
- 6 An adding-calculating machine combined
- 7 A machine of broader usefulness

a "united front in dealing with the various problems soon demonstrated the value of the chambers, and their growth has been in accordance with the phenomenal development of American trade and interests in this part of the world in the last few years.

All of the chambers maintain a high standard in their membership and have done a great deal to enhance the prestige and standing of American business in China. They have been able to do a great deal in improving trade standards and practices from the American standpoint and have assisted materially in the campaign to bring American trade in the Orient into American hands and control. The Shanghai and Tientsin chambers have permanent headquarters and meeting places, and the Shanghai chamber has a permanent secretary who devotes his entire time to the organization.

To Reestablish Berlin Chamber

AMERICAN exporters will be very much interested in the announcement that the American Association of Commerce and Trade (American Chamber of Commerce) of Berlin, Germany, is to be reestablished. The Chamber of Commerce of the United States has been notified that a New York advisory board has been established for the purpose of reorganizing the Berlin association. W. R. Steinway, 107 E. 14th Street, is chairman of this board. The association will be reorganized to limit voting power to Americans, assuring American control.

The outlook is hopeful that the men who are reestablishing this organization will be successful in building out of the old association an American Chamber of Commerce that will do good work and have the respect of all business communities. There is a distinct commercial need for such an organization in Berlin at all times, and particularly now, when our government has no peace-time representations in the German capital.

Italian Tax Requirements

THROUGH the Chamber of Commerce of the United States the Italian Embassy calls the attention of American investors and business men to the law imposing a capital tax that requires immediate returns. The Embassy announcement says:

In accordance with the Italian law of April 22, 1920, making provisions for a tax on patrimony, all persons, regardless of their nationality or residence, possessing taxable property in Italy, including Italian taxable securities wherever held, are required to declare such property when its value on the first of January, 1920, was not less than fifty thousand lire.

Property acquired or capital invested or deposited in Italy after January 1, 1920, is exempt from the tax in question which is intended to be levied on the wealth in existence on December 31st, 1919, on which date for fiscal purposes the period of the war was considered as closed.

Persons in the United States are required to make such declaration not later than August 31st, 1920, at the local Italian Consular Office, where all desired information on the subject may be obtained.

Failure to make such declaration within the stated time will result in a fine.

Chamber Host to Britishers

THE BRITISH delegates to the Imperial Council of Commerce, to be held in Toronto, Canada, from September 18 to 25, will be the guests of the Chamber of Commerce of the United States at Washington

on October 6 and 7, when matters of international trade will be discussed.

The British guests, seventeen in number, including the presidents of the Chambers of Commerce of the principal business cities of Great Britain, will be headed by the Honorable A. J. Hobson, president of the Association of British Chambers of Commerce.

The visitors will be extended the hospitality of the Chamber, and the tentative program that has been drawn up includes a discussion of international trade matters. It is also proposed to entertain the British business men at a banquet on one of the evenings during their stay in Washington to which will be invited federal executives.

On the final day of their stay in Washington it is planned to have the delegates visit Washington's home at Mt. Vernon.

Following is a list of British Representatives: A. J. Hobson, LL.D., president; Stanley Machin, president London Chamber of Commerce; Honorable J. G. Jenkins, London Chamber of Commerce; J. A. Aiton, C.B.E., president Derby Chamber of Commerce; W. F. Russell, vice-president Glasgow Chamber of Commerce; E. J. Bruce, Huddersfield Chamber of Commerce; H. L. Symonds, London Chamber of Commerce; F. W. Plummer, Luton Chamber of Commerce; B. Crapper, Oldham Chamber of Commerce; H. Parsons, Southampton Chamber of Commerce; R. B. Dunwoody, secretary; Rt. Hon. Lord Desborough, K.C.V.C.; James H. Stirling, Belfast Chamber of Commerce; Frank Moore, Leicester Chamber of Commerce; Mr. Atkey, M.P., Nottingham Chamber of Commerce; T. Swinborne Sheldrake, editor "Times Trade Supplement"; S. J. Robinson, Sheffield Chamber of Commerce.

Memphis Means Business

THE MEMPHIS, Tennessee, Chamber of Commerce has come to the decision that the best way to get a thing done is to do it itself.

For years Memphis business men have been passing resolutions urging greater use of the Mississippi river, appointing committees to interest shippers in using the river.

Recently Memphis business men decided to get out of the educational field and to do what they wanted done themselves. At a mass meeting of business men, shippers and receivers, wholesalers and retailers, manufacturers and jobbers held under the auspices of the Memphis Chamber of Commerce, a company was incorporated capitalized at \$1,500,000 for the specific purpose of acquiring sufficient steamboats to give adequate and regular river freight service between Memphis and New Orleans on the south and St. Louis on the north. Just five minutes was required to raise a cash fund of \$75,000 to be used, pending incorporation, in obtaining options on river crafts.

The Pittsburgh Plan

SUPPLEMENTING the Americanization work that is being done by the National Chamber, the Pittsburgh Chamber of Commerce has adopted an Americanization plan of its own which it will endeavor to put into effect immediately. The plan represents two years of effort and development on the part of the Americanization Committee of the Pittsburgh Chamber.

Unqualified indorsement of the plan has been given by Dr. Thomas E. Finegan, Pennsylvania State Superintendent of Instruction. In a letter to the Pittsburgh Chamber he writes: "I have never seen a plan of Ameri-

cization proposed upon a sounder basis than the one which your committee has prepared. I shall be glad to have the co-operation of your organization in the work which we shall undertake to do throughout the state."

A Letter from Secretary Payne

PROVISIONS of the Merchant Marine Act authorizing the President to terminate commercial treaties which restrict the right of the United States to place discriminating duties against foreign tonnage, have been brought to the attention of the Chamber of Commerce of the United States by Secretary Payne of the Interior Department.

Secretary Payne declares that business men of the country, under the act, may confront the practical difficulty of having no right to trade with other countries and that business may be greatly embarrassed.

The Chamber's Committee on Merchant Marine is giving attention to the situation.

Starting Foreign Trade at Home

THE Foreign Commerce Department of the Chamber of Commerce of the United States has just been making a survey of the foreign trade activities of chambers of commerce. In a number of larger cities the commercial organizations have what is known as a foreign trade bureau, foreign trade department, export bureau, export trade department or something of the sort. The bureau or department in question is presided over by a foreign trade manager or foreign trade secretary. The department, as a rule, works with a foreign trade committee made up of business men in the community who are interested in one phase or another of the foreign trade, usually from the export side.

Some of the commercial organizations have been most energetic in their efforts to establish their cities as foreign trade centers. Many American cities have been well advertised abroad by systematic publicity. At this time at least one city is being filmed for foreign trade advertising by moving pictures. Some of them organize foreign trade study classes. Some have organized foreign trade luncheon clubs, arranged for series of foreign trade lectures, and otherwise attempted to arouse and keep up a vigorous foreign trade interest.

The Foreign Commerce Department of the National Chamber is just issuing a little pamphlet called "Promoting Foreign Trade," outlining the steps to be taken in organizing for such work, and enumerating twenty-seven different kinds of foreign trade activities that organizations with established foreign trade work have found to be advisable and in demand.

The pamphlet is being distributed to all commercial organizations and trade organizations that are members of the National Chamber, to assist them in organizing their foreign trade work. More and more chambers of commerce have undertaken this class of work, and the subject at this time is of increasing interest to the specialized trade associations.

Gigantic Housing Problem

WITHIN the past eight months the Detroit House Financing Corporation formed from the efforts of the Detroit Board of Commerce has built 700 to 800 houses. These houses are now occupied by families that need them. The corporation is planning to build more houses and a \$600,000 bond issue is being floated.



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Is a Price Guarantee Lawful?

The Federal Trade Commission is seeking to fix a rule and finds a wide divergence in the opinions of industry—Is the set price a cure for the evil of cancellations?

IS THE practice of giving guarantees against price decline good business or bad? The Federal Trade Commission would like to know. The practice, common for a long time in many trades, spread after the wave of price cutting and cancellations swept over business in the spring and early summer.

Opinion among business men is widely divergent. A manufacturer of paint and varnish calls it "a splendid practice," while a southern coffee house thinks it: "One of the most abominable and expensive customs in merchandising." Perhaps the truth is in the middle, that it is, as a maker of overalls says: "A necessary evil."

The trade press while recognizing the importance of the subject is not inclined to welcome the Federal Trade Commission's effort to make a fixed law. There is a tendency to suggest that the best thing the Government can do is to mind its own business and let each trade settle its own problems in its own way.

The Commission started its inquiry as long ago as last December and it is still after information. Complaints against the practice had been filed with the board and a great diversity of opinion was developed.

Then a questionnaire was sent out to manufacturers, jobbers, retailers and consumers and the results have been compiled. No lack of interest was shown. Answers were received from 355 individuals, corporations and trade bodies in industries that ranged from agricultural implements and alfalfa to walnuts, woollens and windmills.

And there was no one opinion. Of the replies 203 are classed as favorable, 132 as opposing, 12 are noncommittal and 8 favor the practice with reservations.

The Federal Trade Commission is still seeking the light. It has called a trade practice submittal or sort of "town meeting" of business to be held in Washington on October 5 to guide it in its search.

The chief favorable arguments given in answer to the questionnaire are that price guarantees stabilize output, assure the manufacturer of better plant operation and permit the carrying of more adequate stock to meet emergencies. The opponents hold that it is a form of rebating, that it encourages speculative buying and that it operates against the small manufacturer.

Some of the answers which give specific cases may help to a better understanding of the situation:

Deere & Co., Moline, Ill.—Manufacturers' storage facilities limited to two months' output and jobbers will not buy season's requirements in advance without guarantee. Present practice permits more even distribution of shipments.

National Wholesale Druggists' Association.—Approximately 70 per cent of goods handled by wholesale druggists subject to price fixed by manufacturer. Practice is aid to manufacturer in providing complete and quick distribution to consuming market. Do not believe guarantee results in

The Nation's Business Observatory

THE RIGHT AND WRONG of guarantees against price declines is engaging the attention of business. The Federal Trade Commission is seeking to make a rule and has called a "town meeting" of business to decide.

The prospect of lower prices as the trade press sees it. An easing off rather than a sharp and dangerous drop, is what leading industries look forward to.

If we are behind between three and four billion dollars in our building program, can construction do anything but go ahead regardless of cost? That question asked and answered.

John Skelton Williams' charge that the New York banks were charging unreasonable interest rates has brought forth some sharp comment on the other side.

Packers, tanners and shoe manufacturers see a danger in lessening number of beef cattle. Heavy crops and the resulting increase in quantity and decrease in price of feed is turning the farmer back to thoughts of cattle raising.

higher prices. In cases of epidemic, if insufficient stocks in hands of jobbers, abnormal demand quickly drives up prices.

Harper & McIntire Co., Ottumwa, Iowa, jobbers.

—In January jobbers usually purchase gun shells from manufacturers for shipment about April 1, which are delivered by jobbers to retailers subsequent to July 1, subject to October 1 dating. If guarantee not given jobber could not purchase that far in advance and take chances on decline in price.

Purinton & Smith, Hartford, machine tool jobbers.—A jobbing concern carrying \$100,000 worth of machinery, if obliged to assume a 20 per cent reduction in price, would likely suffer loss of year's profits. Best plan would be to give jobber credit for all declines and charge against for all increases.

American Coffee Co., New Orleans.—To cite specific case: April and May, 1919, when coffees were undergoing substantial advances, had 60 and 90-day contracts outstanding and sustained in June, 1919, operations net deficit of \$7,988. During July and August, 1919, market declined rapidly. July 5, 1919, withdrew 60 and 90 day and substituted 30-day guarantee. One customer offered contract for 1920 requirements at fixed price. We declined their business on such basis.

Hawkeye Tire & Rubber Co., Des Moines, Iowa.—Stiffens competition to the extent that old and powerful companies may exclude prospective newcomers from the field. For illustration: If price declines and rebate is given on goods sold by manufacturer during the year 1918, and such goods are still on hand in 1919, rebate could properly be treated as a loss accruing during the conduct of business in 1918, and would therefore be subject to an apportioned return and claim for refund of tax, entailing a loss to the Government. Recent decline in tire prices was openly talked about in the trade, and charged to the intention of larger companies displacing smaller ones.

The trade press differs as widely in its opinions but is less hampered in speaking its feelings. The spokesmen in several lines of business are urgent that the Government let such matters alone.

The Price Current-Grain Reporter, which sees no assurance "that the Commission after a submittal will take a common-sense view of anything when the opportunity is given it to step in and meddle," asks:

Is it more dangerous to the public safety to allow the interested trades to police their own transactions through the mediumship of their own rules executed by members who understand the customs and technicalities of their own trade than to have a commission without responsibility and without practical knowledge of the technicalities of any occupation save their own (in this case law and yellow newspapering) make a universal rule which shall govern transactions in all trades? The law already penalizes dishonesty and violation of contracts. But such laws have failed to check both just as the penalties of poverty have failed to check improvidence, laziness and evil living.

Outspoken opposition is voiced by *Silk* which calls the system of guaranteed prices "a violation of every code of commercial transactions, business ethics and common sense" and adds:

If guaranteed prices were adopted as the general trade practice, lower prices might bankrupt the industry, the result of which would inevitably react upon the buyer's business.

Another feature to be considered in connection with guaranteed prices is the opportunity which it offers for unfair competition. For concerns whose financial resources are large enough to carry them through any drop in the market, the system of guaranteed prices is not as dangerous as for the manufacturer, who, though his resources are not sufficient, may feel forced to guarantee prices in order to do business in competition with the others.

The seller who will guarantee prices is a rank speculator and his operations will not work for the return of good business in the industry.

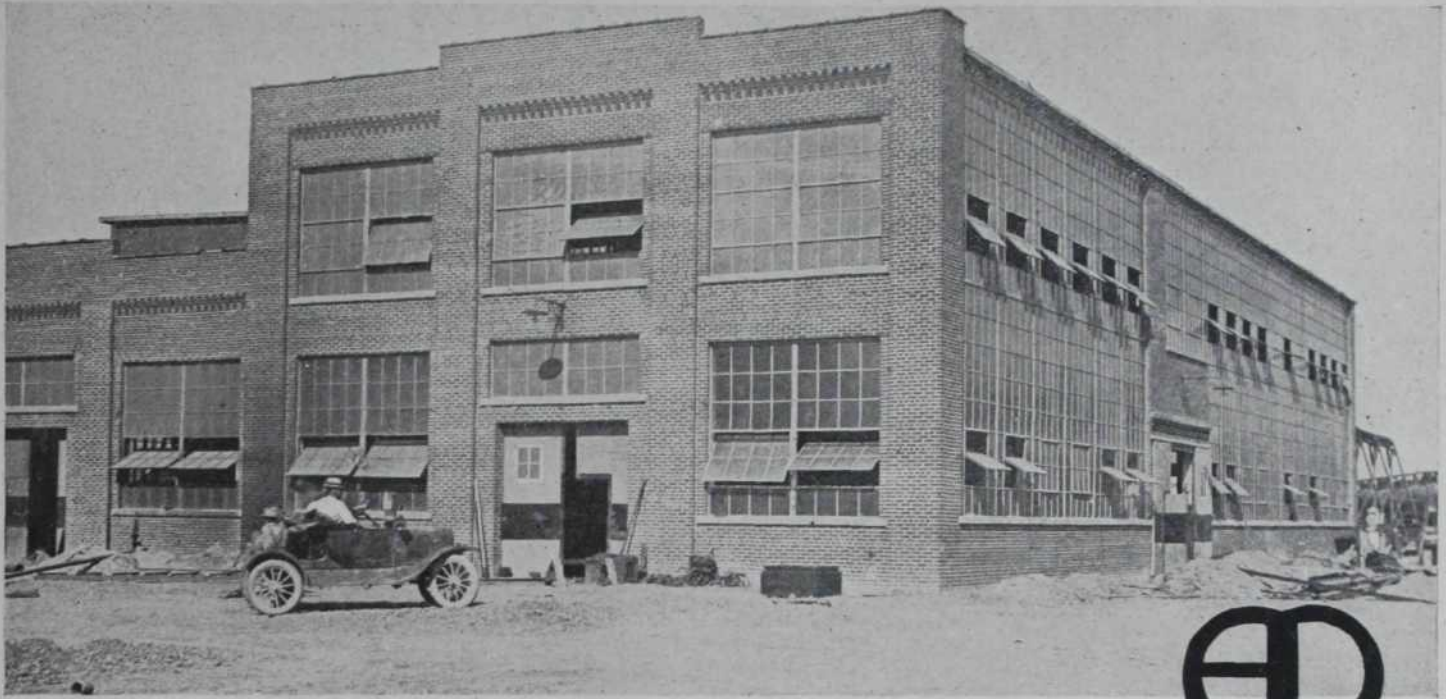
Equally positive is *Drug and Chemical Markets*, which believes that "the Federal Trade Commission will be justified if the custom is declared an unfair trade practice" and gives these reasons:

Guarantees are an artificial prop preventing the free play of prices which are usually subject to the law of supply and demand. Moreover, the manufacturer with large stocks of raw material and ample finances naturally has an advantage over the small manufacturer who hesitates to commit himself to guaranteed prices for a year in advance.

Another phase of the question that is brought up by those who favor price guarantees is the question of the legality of any regulation. Price guarantees are unfair to the ultimate consumer, because he should have the advantage of obtaining lower prices when conditions in the primary market warrant it, and those lower prices are not likely to occur until forced upon the retailer, if the manufacturer fixes the price and stands behind the middleman with determination to hold the price up.

Let individual cases settle themselves, is the advice of the *Oil Paint and Drug Reporter*, which says:

Taking it by and large, the question of whether the practice is fundamentally sound or unsound should be left to the decision of the manufacturer himself and not made the subject of a blanket "yea" or "nay" order. A manufacturer who enters into a contract to safeguard his customer against a decline in price does so because he believes it will obviate future misunderstandings. If his competitor chooses to set his price at the time he makes a sale, that is because his competitor believes



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Cleveland Metal Products Co.
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Dow Chemical Co.

Edgewater Steel Co.
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Hayes Wheel Co.
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Jackson Rim Co.
Lakewood Engineering Co.
Liggett & Meyers Tobacco Co.
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he possesses the better or sounder business judgment. It does not seem to be a question of legality at all, so far as the *Reporter* sees it.

The Iron Age sees many difficulties in the way of fixing a rule to fit all kinds of business. It cites this as an example:

Assume a manufacturer who makes goods to sell to manufacturers in a second class, for manufacturing a more finished product. The second manufacturer can sell his goods the more freely, the greater the supply of his raw materials he can count upon. The manufacturer of the first class makes with him a contract which in essence is a guarantee of service—that if the second manufacturer succeeds in selling his goods, the necessary raw materials will be furnished at not to exceed the stipulated price. Offered such a service contract, the second manufacturer buys more freely and pushes his business more vigorously than he could venture to do if he were not given what is in plain fact a price guarantee.

A plea for price equalization is put forward by *The American Metal Market*, which laments that "no one can have confidence in present prices and without confidence in prices one cannot feel assured that business is going to go ahead."

The National Stockman and Farmer undertakes to voice the opinion of the public:

We can see no reason, from the standpoint of the public, for any order contrary to price guarantees as now made. They are more likely to promote trade than to hamper it. We respectfully suggest that the textile industry and the Federal Trade Commission devote some of their time to the evil of cancellations, which are nothing but breaches of contract in the great majority of cases, and demoralizing to trade.

The question of cancellations links up closely with that of price guarantees and is still a very sore spot in business. Sharp words are used by *The Annalist* which speaks of "the present debauch of contract breaking" and makes these bitter comments on conditions:

Business pride seems somewhat twisted when a man insists his word is so far from being as good as his bond that it is absolutely no good.

In short, commercial honesty, as far as a business man's word is concerned, seems at a discount the world over, and long-established trade principles have been overturned abroad as well as here.

A similar rebuke is read to lumber buyers by the *Southern Lumberman*, which says:

The practice of indiscriminate cancellation of orders on account of the fluctuations in the market is a blot on the record of the lumber industry and must be eliminated. A condition must be created where an order is an order and a contract is a contract. A man's good name is worth vastly more than the few dollars he might gain by flagrantly violating his expressed agreement to accept a certain quantity of lumber at a certain price, and a realization of this fact must be established.

A Slow Decline in Prices and a Better Business Outlook

SETTLING down to conditions more nearly normal and more permanent is the report from many business sources. Falling prices are recorded but there is a disposition to take them calmly and to feel that in the long run they may be to the advantage of both buyer and seller.

In its September *Bulletin*, the National City Bank, which does not believe that "the very pessimistic prognostications are justified," has this to say of the general trend of prices:

With the exception of sugar, which has declined about 10 cents per pound in the last two months, the important food staples are either as low as or lower than a year ago. Meat products are lower, flour and vegetables about the same, fruits lower, coffee less than one-half the price of a year ago. Raw cotton has declined about 10 cents per pound in the last two months, wool even more, hides and

leather more, raw silk about 70 per cent in six months. The markets for textile goods have been paralyzed by these declines in raw materials, but declines have taken place in many important staples.

Over the industrial field the general trend of prices is downward, and the pressure is slackening, with an increase of unemployment. It is well that there shall be general recognition of the fact that the upward movement has run its course and that further wage and price advances are untimely.

The view is generally held that declines will not be precipitate and that there will be a minimum of hardships. A representative expression of financial opinion is found in *The Financial Age*, which says that lower prices are inevitable, and adds:

There are indications that recessions will before long depress the general average considerably below the present level. There is no doubt that the movement will reach many classes of raw materials and manufactured merchandise.

The Michigan Investor, another financial paper, believes there will be no sudden and drastic price reductions and points out that the process of reducing prices is a reversal of producing them. It warns against artificial measures to bring about sharp declines and says:

The danger we have to face is the adoption of an extreme policy of deflation which by attaching too much importance to the deflation of credit and too little to the commodity aspect of the problem will prejudice production.

The National Bank of Commerce of New York accepts the view that reductions are finally on the way and in its monthly publication says:

The beneficial effects which finally will accrue from the reestablishment of business on sound, conservative lines will far outweigh the temporary hardships which will result; although conditions may become temporarily difficult for some sections of the business community.

Evidence of efforts in some lines of business to keep prices up by artificial means is seen by some publications. *Oil, Paint and Drug Reporter*, for instance, declares that attempts will be made to limit production by artificial restrictions and by destructive waste. It has this pungent comment to make:

The fight against a return to normal has started in many lines. But is it good business? Is it according to good business morals to attempt to create a scarcity of something the world needs simply to enhance prices?

Artificial boosting of prices cannot last long, says the *Journal of Commerce*, unless support is given by banks. Undoubtedly there has been willful "jacking up" of prices, this paper declares, suggesting that:

The way to correct these evils is that of withdrawing loans or otherwise curtailing the underlying support upon which reliance is placed for the maintenance of prices. Fortunately some progress is being made in these directions and it is to be hoped that more will be.

The shoe and leather trade is told by *Hide and Leather* that it should not attempt to boost prices unduly because of the increased freight rates.

The public is in no mood to be "roasted," as the phrase is, on prices of staple goods.

In all industries there are indications that leaders seem inclined to feel that prices will fall first elsewhere than in their own lines. An interesting controversy in this respect has arisen between the American Woolen Company and the National Association of Clothiers. The statement of William M. Wood, president of the American Woolen Co., according to the *Dry Goods Economist*, that clothing but not cloth will be cheaper "has

caused much disturbance among clothing manufacturers and retailers throughout the country."

Eli Strouse, president of the National Association of Clothiers, as reported in the *Economist*, has sent to Mr. Wood a telegram in which he makes a vigorous protest. The *Economist* quotes Mr. Strouse as saying:

As to the price of spring clothing, that will all depend on the future trend of raw materials and the cost of them at their various sources and stages of manufacture right through to the finished suit.

Mr. Wood's statement that cloth prices would not be lower was upset later by the announcement of the American Woolen Company of prices for spring 1921, showing drops in prices ranging around 20 per cent on many staple goods and in one or two cases as high as 33 1/3 per cent.

It is noteworthy that in a published statement Mr. Wood gives as one reason for the early shutdown in the spring, cancellations amounting to \$40,000,000.

Railroads Carrying Out Better Service Promises

IT IS EARLY to give a final answer to questions of railroad efficiency under private ownerships but all figures at hand indicate greatly bettered conditions and living up to the five planks which the railroad executives put into their platform as printed in *THE NATION'S BUSINESS* for September.

"Railroads Breaking All Records" is the heading on an article in *Railway Age* which thus justifies the statement:

The statistics for the week ended August 14 are now available. They show that in that week the number of cars loaded was 962,352, which was an increase of 129,913 cars over the corresponding week of 1919, and an increase of 13,556 cars over the corresponding week of 1918. The freight moved in 1918 was a trifle more than in 1917 and these two years have heretofore held the record for the amount of business moved.

Not only are the railways now moving more freight than they ever moved at this time of year, but if they can maintain the rate of progress they are now making they will soon be moving more freight than they ever did at any season in any year. Most railway officers believe in the superiority of private over government operation and it must be intensely gratifying to them to know that they have been able so speedily to overcome the effects of the strike and to begin to move more business than was handled under "unified" operation.

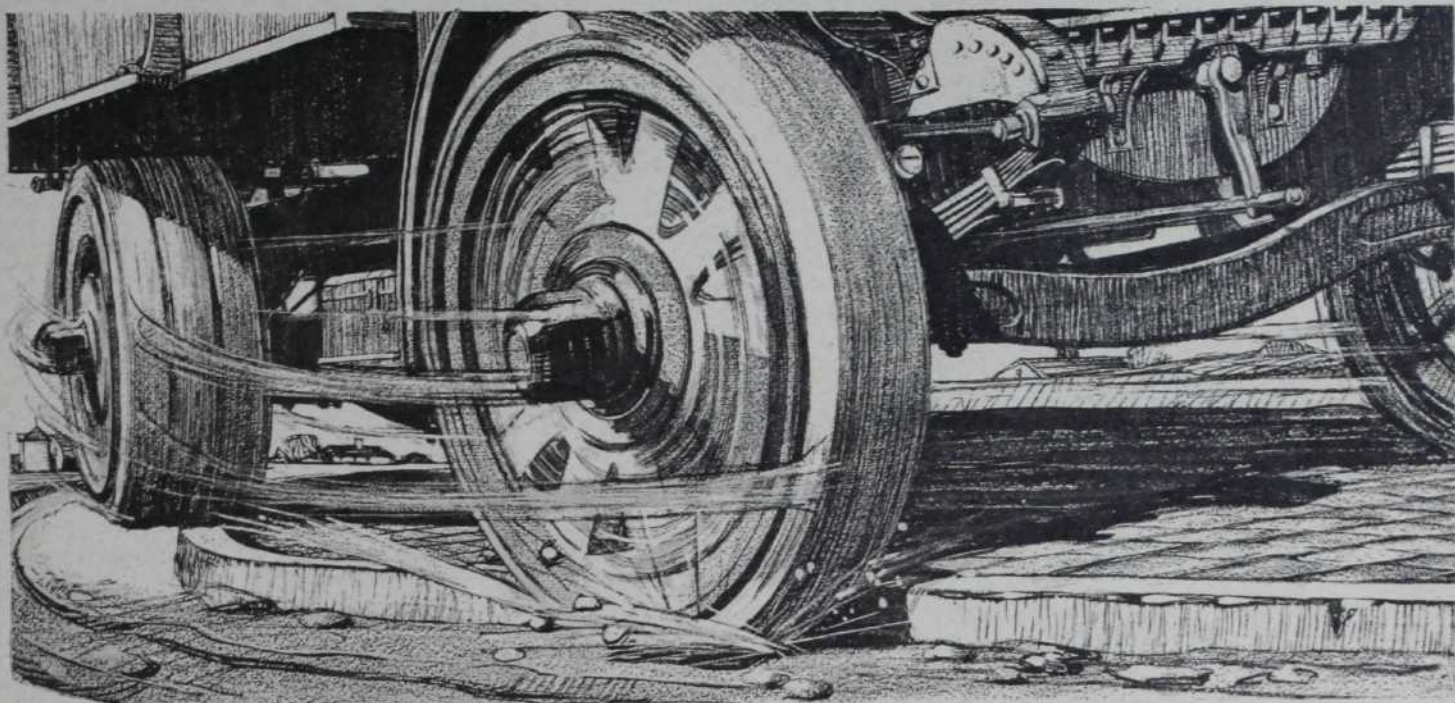
Figures on speed of car movement are far from up-to-date but are equally encouraging. *The Iron Age* gives them with this comment:

The quickest average movement for a year was in 1916, 26.9 miles per day, while in 1918, when the record in ton-mileage was made, the average was 24.6 miles. Monthly statistics are now available only through June for this year, showing: April, 19.7 miles; May, 24.1 miles; June, 25.1 miles. Thus June outdid the 1918 average and at the same rate of progression as June showed over May the month of August should pass the record year's average. Plainly the condition is unsatisfactory, but by comparison it cannot be regarded as wholly bad.

The Williams Usury Charge Provokes Banking Papers

CHARGES by John Skelton Williams, comptroller of the currency, that New York banks have been charging inordinate interest rates and that this has been one of the causes of unsettled values in the security market have provoked considerable discussion.

Vigorous criticism of Mr. Williams and his statements are found in some of the financial and commercial journals. The *Manufacturers Record* declares that in view of the enormous earnings of Federal reserve banks



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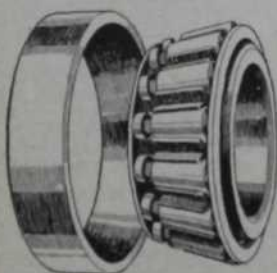
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Mr. Williams' statements are somewhat of a joke. It charges the Federal Reserve System with profiteering, saying:

The earnings of the New York Federal Reserve Bank for the half year ending June 30 amounted to approximately 104 per cent, or at the rate of 208 per cent for the year. Nothing comparable to the profiteering the government has been guilty of through the Federal Reserve System has ever before been witnessed, either in this or in any other country.

A defense of the bankers is made by the *Journal of Commerce*, which asserts that "their rates have not been raised as high or as early as they might have been, and their earnings do not compare with those of the Federal Reserve System."

The view of a prominent unnamed banker is presented by the *American Metal Market*, which quotes him as saying that neither the banks nor Mr. Williams can prevent the workings of the economic law of supply and demand. His statement continues:

It seems very strange indeed, that Mr. Williams should be willing to have cotton prices soar in response to the law of supply and demand, that he should be pleased to see tobacco prices high, or the price of shoes high, and that he should take the view that money alone should remain at a fixed rate and that the commodity, money, should not be governed by economic laws. The highest rates that are paid in New York, call money, are largely paid to out of town banks. It is not likely that half the money loaned by New York banks is for their own account. The call money market can not be eliminated unless a free market for American securities is to cease.

Pointing out that interest is the price paid for capital and that it is regulated by supply and demand *The American Banker* calls Mr. Williams' charges astounding:

We can readily understand it, if it came from a hard hit broker. One would imagine that Mr. Williams' mind runs along with that of a majority of the Federal Reserve Board in the matter of credit contraction and discouragement of speculation. How can New York bankers check speculation if they lower interest rates and make borrowing easy?

Wall Street has been looking a long time for cheap money, the publication goes on to say, but it adds that it is evident that these hopes will not be filled for a long time to come. Speculative funds, it declares, will be the last to be released as New York bankers are following strictly the Reserve Board's injunctions against speculation, not only in securities, but in commodities as well.

The *Wall Street Journal* asks if it is a normal function for the comptroller to render abortive the efforts of the Federal Reserve Board to stimulate deflation.

Coal Keeps Mounting and Blame Is Laid on Everyone

FAVORITE indoor sports in the coal industry would seem at this season to include the puzzle of uncovering responsibility for high prices. Business papers that cover that field are giving considerable space to the subject. The *Coal Age* holds that no single agency can be blame. It comments at some length on the situation and has among other things this to say:

High prices for coal—the exorbitant, outrageous prices that have characterized the spot market for the last three months—are not the result of the machinations of a single group in any branch of the coal industry. They are the direct and inevitable result of bidding in a tight market with the law of supply and demand set at naught by the failure of transportation. To say that the wholesaler, middleman or jobber—whatever you may call him—is the sole cause of the trouble is

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to fly in the face of the facts. The percentage of the total of operators of coal mines who have accepted panic prices for their product is no less than that of jobbers who have taken advantage of the situation.

Famine talk that has helped the present panic in prices is growing less popular, says the *Coal Trade Journal*. This paper says:

To the protests first raised against the shortage propaganda by W. H. Williams, president of the Hudson Coal Company and George H. Cushing, managing director of the American Wholesale Coal Association, an able second has been added by Ellery B. Gordon, secretary manager of the National Retail Coal Merchants' Association. Now the National Coal Association, which so roundly denounced Mr. Cushing for his earlier statement, chimes in with a qualified endorsement of the anti-shortage claims by stating that "no alarm need be felt by the public as to a coal famine emergency during the winter if the comprehensive plans evolved by the operators and the railroads, with the backing of the Interstate Commerce Commission are rigidly carried out."

This magazine objects to printed statements that high prices are due to a coterie of speculators on the ground that the public will assume that "speculators" means wholesalers. It adds:

We do not contend for a minute, that there are not some wholesalers who are richly deserving of all the opprobrium attached to the word "speculator." But neither are we so gullible as to swallow the statement that the entire blame is squarely on speculators in no way related to the operators.

A real coal shortage is apparent to the *Black Diamond*, which declares that production must be increased before prices can fall.

No Promise of Lower Cost of Building, Experts Say

TO BUILD or not to build—that is the question that is bothering manufacturers whose plants are clamoring for more room, while in the cities the housing problem is increasing in importance. Business is concerned with the question, will construction prices go down? and is being told, with some emphasis, that they will not.

A pamphlet recently issued by the George A. Fuller Company has this title: "When Will Building Costs be Lower?" Their answer is "There will be no substantial reduction for several years to come." They base their answer on the fact that there is a building shortage of \$3,500,000,000 measured in money, or from eighteen to twenty-one months measured in time. That means that there will be no reduction in demand, nor do they see a considerable lowering in cost of material or labor. The latter item constitutes 85 to 90 per cent of the cost of a building. The conclusion is:

It is wiser to build now and enjoy the benefit of the improvements than to wait and lose the use of this money-making space for several years and then build at costs which may be even higher.

A similar report is made by the Detroit Steel Products Company of a survey of the building trades. They found "material prices on many articles down," labor "plentiful and more efficient," although wages have not declined. The transportation situation is bad with promises of improvement. Their conclusion is:

Repairs and replacements to industrial buildings should be a feature of the building trade for the next six months, for two reasons; first, most of this expenditure can be deducted from operating expenses; and second, industry, as a rule, believes that the present situation is only a lull, and efforts will be made to put plants in first-class condition during this period.

(Continued on page 60)



"as specified"

STEFECO Steel Buildings eliminate the *guess work* in industrial building operations. This is no time for building in the old way, with all its uncertainties. Nor can you afford to erect steel buildings without *knowing* the exact specifications. Architects and engineers approve the Stefco method, as well as its substantial construction.

Erected to specifications

With every Stefco quotation we supply a set of specifications which shows step by step exactly what you are buying. All the parts are numbered to correspond with the numbers shown on the erection chart—so simple that your own workmen can put up the building without delay. No expert supervision is necessary.

Take truss loads up to three tons

Stefco Sectional Steel Buildings are fabricated at our own plants under highly efficient production methods. The trusses are of the compound Fink type—a *true* truss which will easily carry loads from 1½ to 3 tons without additional bracing. Stefco Buildings are in every sense structural steel buildings reduced to sectional form, so flexible that they can be taken down, moved and re-erected without loss.

Sizes for every industrial use

Stefco buildings come in hundreds of sizes and fit thousands of industrial uses: warehousing, manufacturing, car repair, oil field operation, fireproof storage and freight sheds.

In writing for our illustrated catalog and quotation, you will save time by indicating what use you have for a Stefco Building, the approximate width, length and height of sidewalls. This advisory service is free.

Three Stefco Sectional Steel Buildings at Rosenbaum Bros. grain elevator, 87th street and Stewart avenue, Chicago. That in the foreground, 40 x 40 feet, 12 feet high, is lined and heated; used as a garage. The second Stefco building is 40 x 104 x 12, carries an overhead conveyor on the trusses and is a flour and feed warehouse. On top of the elevator is a Stefco building, 30 x 32 x 10, 175 feet above the ground, erected by eleven men in 13 hours, a wonderful example of adaptability, strength and service. It is used to cover the elevator heads.

Steel Fabricating Corporation

General Offices: 144 Page Ave., Harvey, Ill.

Factories: Harvey, Ill., and Chicago Heights, Ill.





The World's Great Timber Supply

From the great forests of the North and Northwest comes timber, which, converted into a diversity of forms, is used in all parts of the world. In this territory tributary to Chicago is one of the greatest of the world's timber supplies. Here every year are felled hundreds of thousands of towering trees to be transported by steam and river, lakes and railroads to the mills and factories of the manufacturing district centering in Chicago, where they are made into building materials, vehicles, implements, furniture and endless other products.

THIS lumbering, transportation of timber and lumber, and manufacturing of wood products is fundamentally dependent upon financing, much of which is done in Chicago. The Continental & Commercial Banks for many years have assisted this great industry with financial service and today they are co-operating actively for its further development.

The CONTINENTAL and COMMERCIAL BANKS

CHICAGO

INVESTED CAPITAL MORE THAN 50 MILLIONS

RESOURCES MORE THAN \$500,000,000

The *American Contractor* thinks that the accumulation of construction work now "is enough to make the construction business very active in the United States for several years—perhaps five years."

In the face of these unprecedented demands it is difficult to see how any marked recession in material prices can develop during the next three to five years and it is certain that construction activities once the transportation situation improves, will be far above normal for that length of time.

"With New York City annually in need of 28,000 new apartments the net additions to the housing facilities since the first of the year, according to the figures of the tenement house department, amount to a mere 207 apartments."

Such statements as this and the fact that plans for but one apartment house and one dwelling were filed in July in the borough of Manhattan led the governor of the state to call a special session of the legislature.

A study of the situation from the point of view of the builder of small houses is given to the *Public Ledger*, of Philadelphia, by Daniel Crawford, president of the Operative Builders' Association, of that city. He estimates that to build a small house now costs about 2.7 times as much as in 1914, in other words, that a \$3,000 erection now comes to \$8,000 and one of \$4,000 to \$10,800. For rental purposes it is now necessary to get 15 per cent as against 12 per cent six years ago due to higher interest rates, taxes and cost of repairs. In other words, the house that once rented for \$30 a month must now rent for \$100. This is the result, as Mr. Crawford sees it:

When this statement was presented to one of the trust companies transacting the business of financing builders, the first question naturally was "Do you believe that you can obtain this rental for these houses?" The builder advised them that it would be absolutely necessary to obtain that rental, and the next question was: "Where in the city of Philadelphia are houses of this character renting for these figures?" The builder knew of no location where this condition existed, so that the application was not considered by the company.

It is hard for the average person to reconcile himself to this condition, but it is nevertheless true that there will be no new buildings erected until such time as the rents of existing buildings indicate the possibility of realizing a return from new buildings of like character.

Interesting for purposes of comparison are some figures submitted by William B. Greeley, forester, in his report to the United States Senate on timber depletion and lumber prices:

A frame house built in Washington, D. C., in 1917, for \$6,250 is now being duplicated from original plans at a cost of \$12,250. A St. Paul architect reports that a house was built for \$4,240 in 1915, not including plumbing, heating, and wiring, and that a house built from the same plans in October, 1919, cost \$7,724, while for identical plans in February, 1920, the cost rose to \$11,820, or 179 per cent over the 1915 price.

The problem of governmental interference in housing projects is certain to come up and equally certain to arouse controversy. It is inevitable in the opinion of an authority quoted above, the *American Contractor*, which says:

But let us be frank with ourselves; government housing is coming, it is as certain as sunrise if private initiative does not meet the housing demand. A special session of the New York legislature has been called. The chief business is to pass such laws as will accelerate the building of houses and apartments and of very great significance is the fact that Mayor Hylan, of New York City, is advocating a plan to put the city's credit behind home and apartment building. That is the first step toward municipal housing activities. It is a step in the wrong direction, but it is the only step

Modern Living *and the P.A.X.*

THE P.A.X. is a vital necessity in modern business operations. Its equipment and services offer a standard unit which solves and co-ordinates the interior communication problem. The P. A. X. augments and completes, but neither connects with nor supplants local and long distance telephone service.

In the management of your town house or country place you will profit by installing the Automatic Electric Services of the P. A. X. (Private Automatic Exchange). The P. A. X. will cut down your labor costs; cause the routine of your establishment to run as quietly and smoothly as a jeweled watch and add much to your enjoyment of modern living. Like a trained executive of detail, the P. A. X. saves steps, time and inconvenience for host, guest and helper.

Here are listed a few of the many private residences that are using the P.A.X.: Mr. C.K.G. Billings' Residence, Locust Valley, Long Island, N. Y.; Mr. Alfred I. du Pont's Estate, Wilmington, Del.; Mr. Henry Ford's Estate, Dearborn, Mich.; Mr. F. A. Seiberling's Residence, Akron, Ohio; Mr. Louis F. Swift's Residence, Lake Forest, Ill.; Mr. Cornelius Vanderbilt's Residence, New York City.

The Automatic Telephones of the P.A.X. at all times, for 24 hours every day, give prompt, accurate and secret interior communication.

The Code Call of the P.A.X. locates instantly any member of the household, guest or employee and puts him in communication with those who seek him.

The Conference Wire of the P. A. X. enables members of the family to hold a discussion with secrecy, despatch and accuracy, without leaving their rooms.

The Watchmen Service of the P. A. X. perfects the human protection thrown around an estate and makes every telephone a fire or burglar alarm or danger signal by which help can be instantly summoned.

These and many other unified services that give comfort and assure constant efficiency are given over a single pair of wires, operated by a simple dial.

Investigation will prove the value of the P.A.X. not only in your residence, but in your business establishment, whatever its character. A booklet giving full details will be gladly sent upon responsible request.



Among thousands of American industries this dial has become the symbol of perfected organization. It controls all the automatic electric services of the P. A. X.—paging, fire alarm, burglar and watchman service, conference and interior telephone calling.

AUTOMATIC ELECTRIC COMPANY

Dept. 165 1001 Van Buren St.
CHICAGO



The Scare Circle

According to the National Board of Fire Underwriters, one of the chief causes of community fires is the inflammable roof. Over a hundred cities and towns throughout the United States now have ordinances against this menace.



SUDDENLY, without warning— Fate takes up the compass and putting down the pointer on some peaceful community, she decrees "This place shall be burned." Then, swinging an arc, she draws a circle—"These people shall be fear-stricken."

In the scare circle, around the fire, the horror of what might have been, brings fire prevention home to those in it and with sharpened realization Insurance is written, legislation is rushed through, fire safety devices become necessities, fire safe roofings compulsory.

And all this is perfectly human and in its restricted effect, it is the price a locality pays for greater fire safety.

But the scare circle is no longer a mere local panic. It has widened in significance, for today our fire loss is a National scandal, a cause for general concern.

Public men speak of it with grave emphasis, organized safety bodies deplore it. For fire prevention is no trumped up propaganda, no phantasy of the imagination. It is a living blight right here among us,

blocking and mocking our plans to catch up in our building program; burning down ten buildings while we plan a hundred; squandering wealth; diverting labor and disturbing the very tranquility on which our development depends.

Fire prevention is a national responsibility. But it is more one of personal action than legislation. To each of us some preventative measure is possible. Each must set up his own safeguards to fortify his own property.

The spread of fire is nothing more than one building catching the flame from another, usually from roof to roof. So the roof is one of the most vulnerable spots where fire can strike.

That is why Johns-Manville Asbestos roofing is recognized everywhere as an important prevention against fire's spread. For, it is the only all-mineral roofing felt and so while possessing all the flexibility of fabric and adaptable therefore to all kinds of roof surfaces, it is at the same time inert to fire, weather and fungi.

So Johns-Manville Asbestos Roofing either in its "built up" or "ready roll" form or as shingles, is not only fire-immune but the most remarkable of roofings. Because it is all mineral it is impervious to all the ravages to which ordinary roofings are subject.

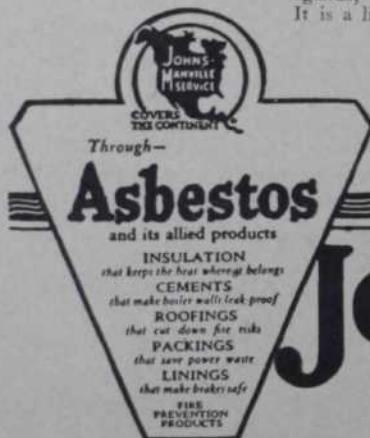
It is economical because it lasts for the life of the building without need of repair or paint. Truly the most desirable roofing on all counts.

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Madison Ave. at 41st St., New York City

10 Factories—Branches in 64 Large Cities

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JOHNS-MANVILLE

Serves in Conservation

possible if private interests offer nothing better as an alternative.

Packers and Tanners Fear Shortage of Meat and Hides

IT IS NOT easy for the food supply pessimists to keep on crying, Woe! Woe! in the face of the crop reports. Some time ago *Food* quoted *Farm and Home*, of Springfield, Mass., as predicting a starvation winter, with eggs at \$2 to \$3 a dozen, flour at \$25 to \$40 a barrel and potatoes at \$10 to \$15 a bushel. The predictions find little to support them at present.

In one line of production there is still a gloomy note. The decrease of live stock is disturbing packers, tanners and shoe manufacturers and will have its inevitable effect on the individual's meat and shoe bills.

The situation is reflected in a statement issued by the Institute of American Meat Packers, in which a comparison was made of the first six months of 1920 with the corresponding period of 1919. The decrease in meat production was about 400,000,000 pounds with a promise of about a billion pounds or nearly 5 per cent loss for the whole year. The statement, quoted in the *National Provisioner*, goes on to say:

During nearly every month of 1920 producers lost money on cattle and many packers reported losses on beef. Prices of hogs and pork products are substantially lower now than at this time last year, due largely to diminished exports. The decrease in slaughter indicates that, as a result of these losses, some producers have cut down their herds and may restrict production. Such a situation would be an economic misfortune for both the live-stock producer and for the public.

Past experience has been normally that higher prices for meat animals, and hence for meat, have followed restricted production, after which the consumer again restricted consumption. The ratio of live stock to population for the last twenty years, with the exception of one or two of the war years, has been constantly decreasing.

In some quarters world crop conditions and the price trend in corn and hay are interpreted favorably to producers of live stock. Those holding this view, point out that lower prices for grain obviously would reduce the cost of raising live stock.

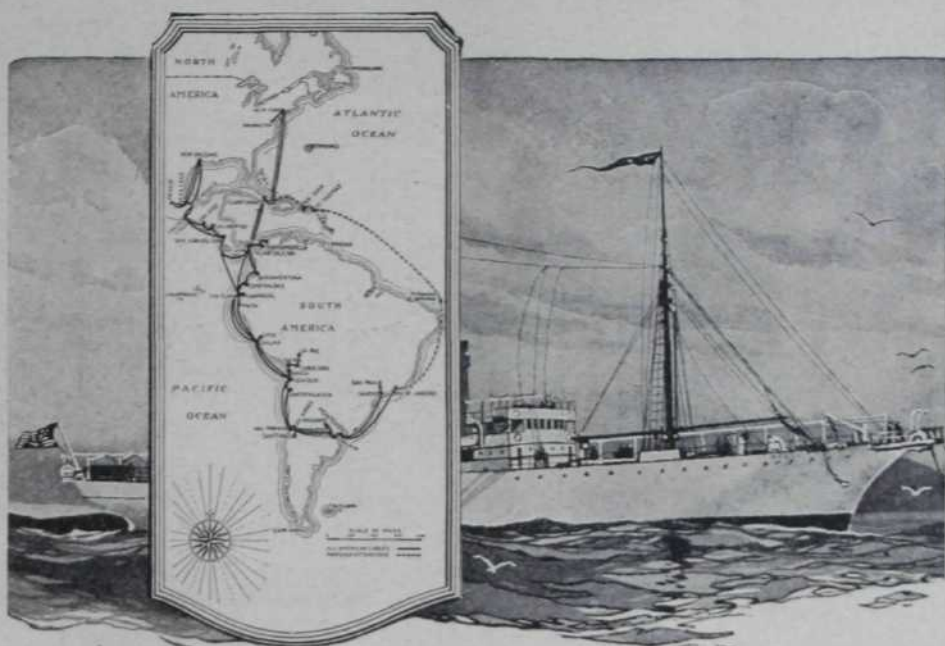
High production costs are not the only cause. There is a tendency to lay some of the blame on the Federal Reserve Banks. *The Shoe and Leather Reporter* which does not see "any assurance that raw material for tanning will be plentiful for years to come" is one of those which blame the banks:

One of the many perplexities developed by the war is the abnormal slaughter of cattle and the peculiar conditions which are making it practically impossible for live-stock men to continue breeding cattle. The banks which for years have specialized on cattle loans have shortened their lines of credit, and heaves are being rushed to market when they should go to the feed lots for fattening. This causes more hides for the time being, but the ultimate outlook is threatening.

The *Manufacturers' Record*, which has devoted much space lately to pointing out the shortcomings of the Federal Reserve Banks, quotes with approval the statement from the leather periodical and adds this comment:

This is but another case where the curtailment of credit by banks means not only temporary losses running into the millions and hundreds of millions on the part of the producers, but it means a condition which will eventually add enormously to the cost of foodstuffs. Under the dominating power of the Federal Reserve Board member banks have been curtailing credit, and the result is that cattlemen have been rushing their live stock to the market regardless of prices and without regard to the future supply which the country will need. Liquidation of that sort bodes ill for the future.

(Continued on page 65)



Knitting Tighter the Relationships of the Americas--

"Like the threads of a giant web ALL AMERICA CABLES radiate out from New York commercially enmeshing Central and South America."

Financed by American capital, conceived, directed and perfected by Americans, ALL AMERICA CABLES are one of the greatest forces cementing together socially, commercially and diplomatically the peoples of our Western Hemisphere.

Founded in 1879, by James A. Scrymser, the ALL AMERICA CABLES System has grown until now it has in operation 22,686 statute miles of cable transmitting the official, social, economic and commercial messages of Americans.

ALL AMERICA CABLES are the only American-owned direct means of cable communication between the Americas. This system insures rapid, direct and accurate handling of your messages.



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To make sure that your cables to Central and South America are sent over the ALL AMERICA CABLES, Inc., mark them "Via All America". These words are transmitted free of charge by any telegraph or cable company.

ALL AMERICA CABLES



SEARS ROEBUCK & CO., CHICAGO, ILL.

INCREASING YOUR PLANT TO INCREASE PRODUCTION

If the demand for your commodity is so great that you are compelled to build an extension to your plant, it is self-evident that no time is to be lost in starting it.

It is equally important that no time is to be lost in finishing it.

You can regulate the starting date, but the completion date is up to the contractor.

Therefore, your most vital problem is to select a contractor whose promises are not guess-work, but gospel.

The word of this organization is as good as gold, and we stand ready to prove it at a conference.

Our Advice is as Good as Our Service

THOMPSON-STARRETT COMPANY
INDUSTRIAL CONSTRUCTION
NEW YORK

CHICAGO

DETROIT

PITTSBURGH

The farmer's point of view was voiced by R. F. Eagle, as spokesman for President Thomas E. Wilson, of the meat packers, when he told a Farmers' Institute:

During the most of 1920 the consumer has been eating beef and beef products at the expense of the farmer. In most months of the current year the price paid by the consumer for beef products was not sufficient, despite great economy in dressing and distribution, to give the farmer a working profit on his cattle, and even so, consumers complained about the price of meat.

The price of feed has been the chief factor in making cattle and hog raising unprofitable and now the stockraiser finds himself in a dilemma. As the *Price Current-Grain Reporter* puts it, he is all dressed up with nowhere to go.

With more hay and other forage in sight for fall and winter use than they have had for years, they have few cattle or other stock to use it up, which only goes to show that the farmers' innumerable advisors have been overdoing their stress on prices and loss on live stock.

No industry or occupation that nets only a loss, as certain farmer advisors have for years been saying of farming in general and of live stock in particular will continue long—it can't.

The farm papers in the cattle districts are urging the growers to be too hasty in getting out of the business and are seeking remedy. *Wallace's Farmer* asks "What is the cure?" and proceeds to answer its own question:

If cattlemen generally recognize the situation as it is now developed, it will do no good, for the reason that they will start buying feeders again and thus make inevitable another period of severe loss. There must be some method of pooling cattle by grades and bargaining either with the packers or the public on the basis of these pooled grades. The farmer does not have any business trying to jockey with the market. His business is production and the present system of marketing which tends to divert his attention from production is short-sighted and an injury to both producer and consumer.

The same point of view is taken by the *Iowa Homestead*, which blames the farmer who doesn't stick to it:

At present live stock prices are on the upward trend. They should, in view of the supply of live animals, continue to advance and they will unless they are manipulated. Even though they are manipulated the person interested must depend for profits on a plentiful supply of live stock, and when prices are beaten down a reduced supply reaches a minimum which threatens further profits the market inclines upward to increase production. On the whole conditions are not so unfavorable as prices would indicate.

Our Auto Bill Bigger Than Our Railroad Bill

THERE has been little outcry against the increase in railroad rates. Business seems to feel that better service would be well worth the bill that must be paid.

The exact figures of that bill are still uncertain. *Railway Age* says the total earnings of the railroads will advance about \$1,580,000,000 annually and that "the country's total annual bill for railroad service will be not far from \$6,700,000,000."

The same authority, however, finds another transportation bill of about equal size which the country will pay and pay cheerfully. *Railway Age* presents figures to show that the cost of running the automobiles of the country for 1920 is more than \$6,000,000,000 a year. This does not include the \$2,500,000,000 or more spent or to be spent, on the 2,250,000 new cars this year, but does include some

Far Reaching Credit

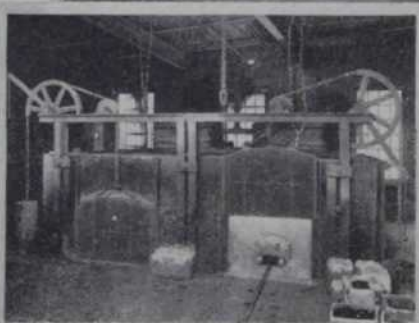
The basis of Commerce and Industry is raw material. The production, gathering and transporting of raw material through jungles, down tropic rivers, across many seas—all these operations are made possible by the far reaching power of credit.

The National Bank of Commerce in New York employs its great credit resources in furthering the processes of production, manufacture and distribution from raw material to final consumption.

National Bank of Commerce in New York

Capital, Surplus and Undivided Profits
Over Fifty-five Million Dollars





Heat Treatment of Drop-Forgings

EACH grade of steel contains the possibility of a variety of physical conditions and, consequently, all steel forgings may be greatly modified in strength, toughness, or hardness by suitable heat-treatment. This process requires expert skill and special equipment.

In Williams' product, the grades of steel and its method of treatment are prescribed and controlled by a highly trained staff; some of the equipment, including the automatic furnace for treating quantities of heavy parts, like auto axles and crankshafts, is shown above.

Williams' Superior Drop-Forgings and Drop-Forged Tools are superior because scientific heat-treatment makes them dependable.

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The Drop-Forging People

BROOKLYN
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BUFFALO
24 Vulcan St.

CHICAGO
1024 W. 120 St.

\$2,600,000,000 for depreciation and interest on investment. A billion for tires and a billion and a half for garage storage and service and you have the chief items.

The figures make no allowances for money spent on highways either in the form of direct outlay or interest on invested money. *Railway Age* concludes from these figures:

The American public will be spending as much for its automobile transportation, most of which is a luxury, as for its railroad transportation, most of which is a necessity.

As long as the public is voluntarily and gladly spending, including the cost of building and maintaining highways, around 6½ billion dollars a year for automobile transportation, it seems doubtful if it will find it very difficult to pay a substantially equal bill for the essential service of railroad transportation.

With these figures in mind it is surprising to see the conclusions reached by *The Iron Age* and *The American Metal Market* as to the importance of the automobile in the steel industry.

The Iron Age figures the amount of finished rolled steel shipped to consumers from January 1, 1919, to July 1, 1920, at 33,000,000 gross tons, a total consumption that equals the best pre-war record and that in a period when railroad demand was light and there was relatively little heavy construction work undertaken. Yet, says *The Iron Age*, the automobile is not the answer:

No one can possibly compute from them that the automobile industry has absorbed nearly as much as 3,300,000 gross tons of finished rolled steel in a period when the deliveries were 33,000,000 tons. Per contra, the decline in automobile building activity cannot make much of a hole in steel demand. The decrease from the recent peak to the lowest conceivable rate of automobile building can hardly mean a difference of more than a million gross tons a year of finished rolled steel, and the productive capacity is about 40,000,000 tons.

The American Metal Market reaches the same conclusion:

By the most liberal computation that can be made the automobile industry running full could not engage more than about 7 per cent of the steel making capacity. Give it a rate of 50 per cent instead, and the steel industry has lost only 3½ per cent of its market.

The steel industry simply depends upon general business, upon manufacturing consumers as a whole and upon those who put up structures of various sorts. When business in general is good there is a good demand for steel. When general business is very bad there is still a moderate demand for steel. Never in the history of the steel industry, except in the latter part of 1914, has it operated at much below 60 per cent of capacity, and it has passed through some pretty bad times, when one consuming industry after another could be picked out as apparently taking no steel at all.

The cotton industry shows more concern over the part the automobile plays in its prosperity. Estimates have been printed that one-half of the new spindles put into operation this year will turn their output over to the automobile. *The Textile World Journal* describes the automotive industry "as one of the few in which production has more than kept pace with consumption," and then reads this lesson to its neighbor business:

Every spindle and loom that is now producing goods for the automotive industry, or that is projected for that purpose, will be needed eventually, together with a very large additional spindleage. The unfortunate immediate difficulty is that there is little or no substitute business available. The fact that few contracts have been cancelled, and that orders have simply been deferred for three to six months, does not materially lighten the manufacturers' burden.

A deferred contract is no better than a cancelled contract until deliveries are actually resumed.

MEAD-MORRISON SERVICE

LIFTS THE LOAD OF INDUSTRY

MEAD-MORRISON material-handling equipment, backed up by Mead-Morrison Service, is doing valuable work and saving time and money in varied lines of the nation's industry.

Mead-Morrison Engineers have, in each unit of the Mead-Morrison line, built a material-handling machine whose power, dependability, economy, and length of life has been proven by performance.

No problem is too intricate for this efficient combination of utility and service. Mead-Morrison Engineers see to it that the purchaser not only gets the proper equipment but that each piece is utilized to assure maximum usefulness.

Mead-Morrison's practical constructive engineering experience in designing and building large units throughout the country has aided them in producing the following line of material-handling equipment

**Steam Hoists
Electric Hoists
Grab Buckets
Conveyers
Car Pullers
Winches**

Our latest complete catalog illustrates and describes all Mead-Morrison Material-handling equipment. Write for it.

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Beckwith Machinery Co. - - - - Cleveland, O.	The Equity Equipment Co.
Boehck Lowe Machinery Co., Inc.	Cincinnati, O.
Milwaukee, Wis.	The George Fife Equipment Co.
The Bonsack Machine Co. - - St. Louis, Mo.	Indianapolis, Ind.
The Borchert Ingersoll Co.	P. I. Perkins Co. - - - - Boston, Mass.
St. Paul, Minn.	T. J. Pratt - - - - - Norfolk, Va.

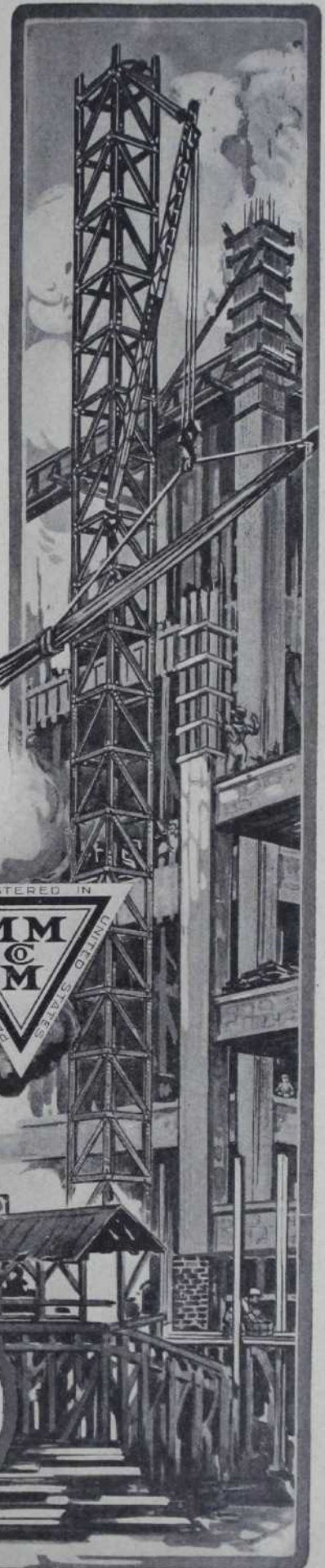
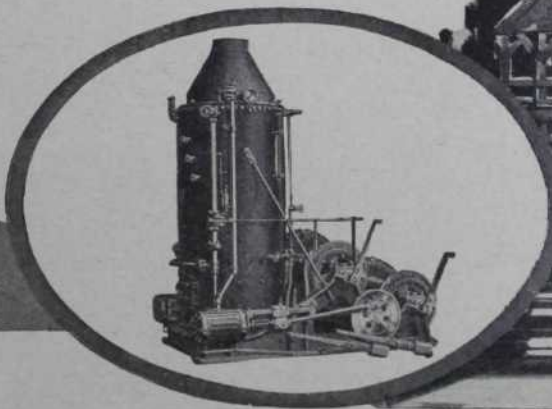
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HOTEL PENNSYLVANIA

Opposite Pennsylvania Terminal New York

Eleven Out of 19,000 is Too Many

Standing in the lobby of the Pennsylvania the other evening, watching people, I got a new sensation. The mail-clerk had just been talking to me; and I noticed in his hand a little report-form which had at the bottom the figures 19,409. That was the mail and telegrams which one week had brought to the Pennsylvania's mail-desk for distribution!

Now of all those people in the lobby (maybe you were among them), there probably weren't three who had ever thought, in any such terms as that, of the complex hotel-machine they were using.

But it impressed me that there might be many of them who would find a moment's interest in getting such a behind-the-scenes glimpse of detail in the hotel's daily routine. And the reason it occurred to me, I imagine, is because we frequently find (in both the Pennsylvania and the Statler hotels) that the guest who has the best general idea of a hotel's problems is, somehow, the guest who always seems to "get the best service."

When you think of those 19,000 letters, most of them coming in during the busy eight hours of each twenty-four or something like 300 an hour—every one of them important to somebody who is making that hotel his temporary home, you may get a new

idea of how an illegible signature on our guest-register can complicate the difficulty of giving good mail-service. Of course we check every signature, with the writer, as soon as it's written—we do scores of things to prevent the little mistakes which make big troubles. But if we could just get across to our guest an inkling of how service might be affected by the legibility of his signature, or by the way his order is given, we could almost promise to keep everybody happy all the time.

Yes, and the mail-clerk's report of that week's work was that he had had eleven complaints about mail-service. Eleven—and 19,409 pieces of mail!

Emstax



Hotel Pennsylvania, with its 2200 rooms, 2200 baths, is the largest hotel in the world—built and operated for discriminating travelers who want the best there is.

Associated with it are the four *Hotels Statler* in Buffalo, Cleveland, Detroit and St. Louis; and each of these five hotels makes reservations for all the others. All have private

baths, circulating icewater and other unusual conveniences in every room. An entire block of ground in Buffalo has just been purchased, for a new *Hotel Statler*.

Mining for City Streets

Pitch-Lake, Trinidad, the world's greatest natural source of asphalt, flows in an unending stream to make our pavements and roofing

By FRANK DORRANCE HOPLEY

THE ENDS of the world may meet as an automobile rolls along a well laid pavement. Rubber from the Malay States may be gliding—or bumping—over asphalt from where? From Trinidad, an island just off the mainland of Venezuela. It's a British possession and so, too, are the Malay States.

Port of Spain is Trinidad's one city, and from it moves an unending procession of ships bringing to the United States the material from which is made the street under our feet and the roof over our head.

About 28 miles, as the crow flies, from the coast is the "Pitch-Lake." It is not really a lake in the general meaning of the word, except that its shape might suggest the name, but is a depression in the crater of an old mud volcano, which, in ages past, has been slowly filled with the pitch-like substance known as asphalt.

This lake is some 138 feet above the sea level. It is nearly circular and covers an area of 11.4 acres. Around the lake are a few low hills dotted here and there with clumps of trees and bushes. The surface of the lake is a dull, bluish gray, and at irregular intervals is broken by small pools of water. Occasionally shrubs and small trees occur upon it, and are known as islands. These little "islands" move from place to place with the movement of the pitch, for the lake is in constant motion, due to the evolution of gas at the center. One may walk, however, upon the surface of the asphalt, as it is solid enough to bear the weight of a man. If you stand in one place, however, for any length of time you will find that you are beginning to sink, very slowly, of course, and your feet will commence to feel hot, not unlike the sensation when you stand on an asphalt paved street upon a very hot day.

The asphalt has its origin in the petroleum which underlies the deposit. Just how deep the lake is has never been fully determined, but recent borings have gone to a depth of 175 feet, before the drill was bent and put out of commission by the movement of the asphalt.

This movement of the lake is one of its unique features, and is produced by the evolu-

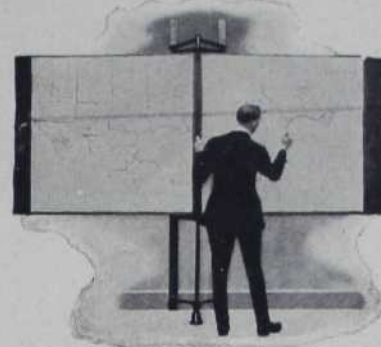
tion of gas at its center. A piece of wood driven erect into the asphalt, near the middle of the lake, will be gradually carried to the circumference, its deflection from the perpendicular increasing as the distance from the center increases, until at last it topples over and is engulfed in the mass of asphalt.

Another peculiarity of the lake is, that whenever a hole is dug in its surface, whether deep or shallow, it rapidly fills up, and the surface soon resumes its original level. In the work of excavation, a space of, perhaps, 60 x 40 feet, and to a depth of three or four feet, will be dug out during the day. The next morning you will find the asphalt approximately level with the rest of the lake.

This filling up process, however, does not mean that new asphalt has come into the lake from underground sources. It is evident that the excavations are filled by a very slow settling or leveling of the surface asphalt.

The asphalt, upon a chemical analysis, is found to be composed of bitumen, mineral matter and water. So uniform is its composition that samples taken from near the center of the lake, and at intervals of 200 feet until 1,400 feet was reached, have analyzed practically the same.

Asphalt is of a blackish, brown color and, in appearance, somewhat resembles coal. It is dug out of the lake by men with picks, which is the only tool required. Under repeated blows the pitch breaks rapidly. The men are the native negroes, who are skilled in this line. They break out lumps of asphalt a couple of feet across. These would be entirely too heavy for an untrained laborer to carry, but the Trinidad negro handles them with ease. He simply lifts a lump, and sometimes two, places them upon his head, walks a few yards, and drops them into a skip, which is carried on a small platform car which runs on a narrow-gauge road, laid over the surface of the lake, on palm-tree ties. Because of the constant motion of the asphalt, these tracks have to be frequently aligned and inspected. It is surprising, however, how well the asphalt supports this railroad. These cars, with the loaded skips, are taken to a terminal station, located on the shore of the



Get Full Value

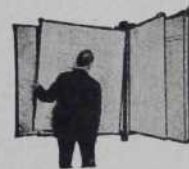
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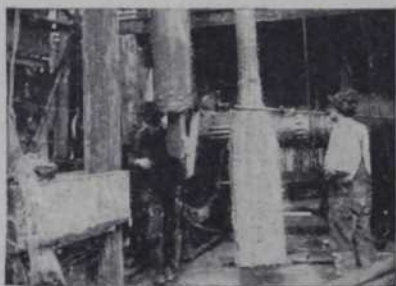
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lake. The skips are then hoisted and dumped into other skips. These latter skips are carried on a cable-way down to the shore of the island, and out into the ocean on a pier. They are then emptied into chutes and dumped into the hold of a vessel, alongside the pier.

The rapidity with which a vessel can be loaded is amazing. A thousand tons or more can easily be put aboard a steamer, in this way, in a day.

The crude material, after it is dumped into the hold of a vessel, runs together into a compact mass again, during the voyage to the United States. When it arrives, the whole process has to be gone over once more. The asphalt must be picked out by laborers as the vessel lies alongside the pier, and again loaded into skips. These skips are raised and carried by a railway to large storage bins, which will hold several thousand tons, where they are again hoisted, and the asphalt held until it is refined.

The Factory Farm at Work

THE MAN who raises our wheat and our tomatoes is told from time to time that he ought to run his farm like a factory, that in that way lies a larger income for him and a more certain food yield for the country. To which the farmers reply that conditions are different, that the factory problems do not include weather nor is the factory's market so far off and so uncertain. More than that, says the farmer, "I run not merely a factory but a home. I am raising children as well as potatoes and that complicates my problem."

But the factory farm is a possibility and a successful one and we have the word of the New Jersey State Chamber of Commerce for it. That body has just issued a report on the Seabrook Farms Company near Bridgeton.

This is no farm whose "seas of golden wheat stretch farther than the eye can reach" nor one whose cattle are counted by the thousands. It is a proposition of raising "garden truck," of 10,000 backyard gardens rolled into one. It turns out half a million dollars' worth of lettuce and onions, and strawberries and spinach, not forgetting parsley and peppers. It is financed largely by nearby bankers and business men with some stock subscriptions from Philadelphia and New York, and all of them guided by a report by a firm of prominent engineer-accountants.

The man who put the plan through on a big business basis is a son who instead of leaving his father's farm added to it until it grew in six years from 100 acres to nearly 1,500, with a couple of acres under glass for hurry-up production when salads are wanted out of season and sell at fancy prices.

It's the 200 acres of the 1,400 that are under irrigation that tell the story of big business farming. They produce nearly nine-tenths of the sales of the business. The younger man had seen his father make money when rain fell as it was wanted and lose it other years until the question of turning on the rain as it was needed became a mild obsession with them.

Then, one day, a man told him of seeing a system of artificial watering in use on the seed farm of Chris. Hausen in Copenhagen. The man didn't know any details, so the young farmer-financier wrote to Hausen who obligingly told him that the device he used was an American invention made in Troy, Ohio.

The use of overhead irrigation has been the basis of the business. When visitors ask



A Leader of Men

Back of his energy is sound health, and back of his health is self-discipline that provides for regularity in habits of eating, exercising—bowel elimination.

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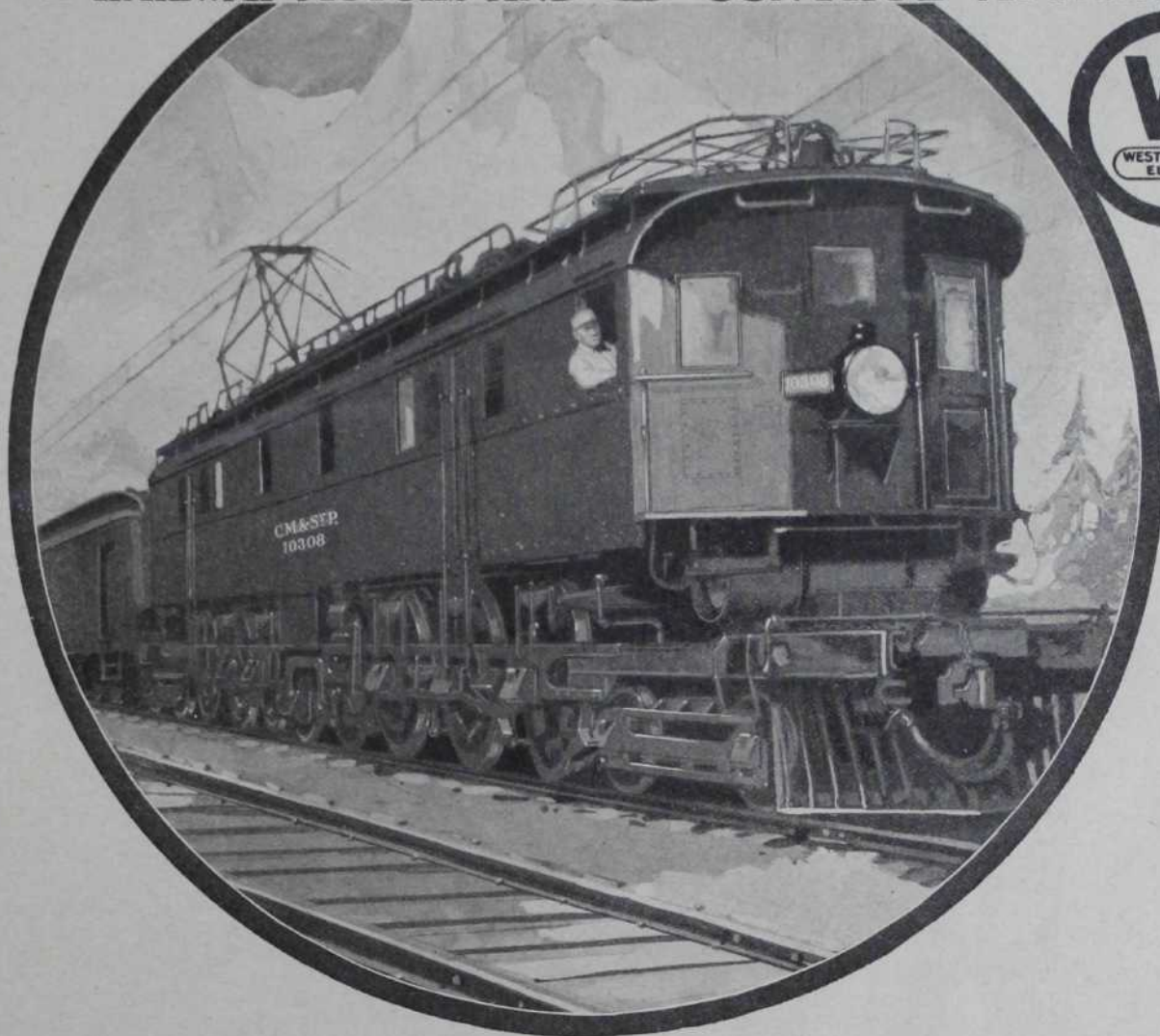
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With no flues to clean—no grates to repair—no boilers to inspect, these locomotives are in almost

constant operation, receiving light inspections of equipment only at each end of the 440 mile electrification, whereas steam locomotives make only about 100 miles between inspections. Often as many as 5,000 miles are covered by these electric locomotives before they receive a heavy shop inspection. Such continuous service performance enables one Baldwin-Westinghouse to do the work of three or four steam locomotives.

Besides developing a tremendous tractive capacity of 4,200 horsepower, the motors of these mighty engines, turned into generators on descending grades, brake the momentum of the train and generate power which is returned to the line to help other trains make the ascent. Air brakes are unnecessary except in emergencies and in making complete stops.

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GLOBE

him how often he uses it, Mr. Seabrook's answer is: "How often *don't* it rain?"

The cutting of expenses for cultivation and spraying is one of the big factors. Crops that grow when they are told to, fight weeds and bugs themselves much more successfully than crops that depend on a not always kindly nature. The argument for irrigation comes down to this: it increases quantity 200 to 300 per cent and quality 50 to 100 per cent.

The whole business is worked on the same careful lines, labor, fertilizer, storage and marketing all are provided for.

And bees! It costs from \$400 to \$500 a year for bees to pollinate the crops in the greenhouses.

Add this to the labor costs!

Feed the Old Flivver with Straw

IF THE farmer can't make the old horse go on straw and corn cobs perhaps he can run his car, his tractor and his stationary engine with gas made from them. That's the problem the Department of Agriculture is struggling with. Already its experimenters have run an automobile with the new combustible and used it for lighting and cooking.

If the results of these tests warrant further investigation the experiments will be extended to the problem of plant equipment for producing the gas on a scale sufficient to allow the farmer to supply light and heat for his house, power for stationary engines, and possibly for his tractor from a small individual outfit. If a suitable unit can be constructed it seems likely that the straw gas may have a certain economic value in the sections of the country where the raw material from which the gas is made is now considered as waste and burned or left to rot. In some sections of the country the straw is used as fertilizer, but in the west and northwest there is an unlimited supply of the material available for conversion into light and fuel for the farm home.

While it has been possible to operate an automobile with straw gas and it is known that 50 pounds of straw will produce about 300 cubic feet of gas—an amount sufficient to drive a light roadster 15 miles—the problem of reducing the gas to liquid form or condensing it sufficiently to allow it to be carried is an essential one that must be solved before straw gas can be considered as a possible motor fuel.

A Plea for a White Collar Union

THESE have been lean years for what in America, we have sometimes called the "white collar men," what England has called the "new poor." The civil engineers employed by the railroads are looking with somewhat envious eyes at the locomotive engineers since the award of the railroad wage board, which did not consider the men who handle the transit and level.

There is a feeling voiced in letters to the engineering papers that if their professional societies were a little more like the trades unions it would have helped. One engineer makes this protest!

"If the unions were permitted to make demands through national organizations and thus be considered as complying with the law, why would not a similar demand by a national engineering society have equal weight, and if not, why did not the national society protest against such discrimination?"

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The Merry-Go-Round

By FRANK GEORGE

THE smoking-room talk had reached the point of finding fault with the government. Suddenly an aggressive looking business man banged the window sill with his fist.

"By Jupiter," he exclaimed, "I understand that the Bureau of Internal Revenue is still working on 1917 income tax returns! Now why is that?"

"Insufficient help," remarked a traveler recently dissociated from government service.

"Help? Washington is cluttered with government clerks!"

"Take the very matter about which you complain," the ex-government employee explained, "at present, there are some 5,000,000 income tax payers in this country. Because of lack of auditors and other help the work of auditing returns is considerably behind. As yet they haven't touched the 1918 business."

"Why don't they put on more employees?"

"Congress," enigmatically.

"What has Congress to do with it?"

"Well, you see," the other elucidated, "the Bureau was really two years behind, but by accelerating the routine this was reduced to one year. Then along came the Excess Profits Tax Law. If it hadn't been for that the bureau stood in a fair way of catching up. However, Congress failed to appropriate a sufficient sum of money to take care of the additional work that the law imposed upon the bureau and, as a result, the organization is undermanned."

"How long will it be before the 1918 returns are cleaned up?" the business executive inquired.

"Next year or the year after. The general public simply has no idea of the volume of work necessary in connection with an income tax return. For instance, after you file your return with the district collector he sends it to Washington. Eliminating the various steps taken in the way of recording payments, an auditor one day examines the return.

Checking and Re-checking

WHEN the auditor makes his examination he may find that it is necessary to have additional data in explanation of some particular item. He indites a letter to you requesting the information. That letter is reviewed by a number of persons. If a question of law is involved legal eyes scrutinize the communication. If there are any figures a comptometer operator checks them. Letter critics examine the communication for grammatical errors and as to general appearance. Briefly, after the auditor has dictated the letter it is checked and re-checked and examined and re-examined so that there will not be the slightest possibility of error as to a statement of fact, interpretation of law, or even the misplacement of a comma."

"It seems to me," opined the business man, "that this system of having the work of the auditor reviewed by other employees is the reason why the bureau is behind with its work. Even though the organization is enlarged, the effect will be simply to increase the size of the circle. An auditor should be qualified to perform his work without having it reviewed by another person. Moreover, the proper procedure in auditing these returns would be to assemble the data first and then hand it over to the auditor."

"That would simply reverse things," explained the other.

"Precisely. But you'd get your result first shot out of the box. The method you describe is an aimless one. If the auditor happens to make a bull's-eye all right. Other-

Reducing the percentage of defective castings results in 17% saving in machining costs

ALL manufacture began with the making of single articles on a one-at-a-time basis. One man usually performed every operation. Each part of the finished article was made and adjusted to its single purpose.

Eli Whitney is given credit for the idea of standardized production—at that time a revolutionary theory, because it meant that each worker specialized on a single process or part which, when completed, was in theory interchangeable with any other part produced at his bench or lathe.

Without standardized production many of the greatest achievements of American industry would have been impossible—the popular-priced automobile, the moderately-priced watch, the startling array of really usable hardware offered by the five-and-ten cent store, and other striking examples.

Standardized production—the repetition of exactly similar operations day after day at a speed which leaves unit production trailing far behind—accomplished the result.

Even today, however, many American manufacturers do not fully realize its possibilities. Apparently operating on standardized production, they are, nevertheless, still blind to an opportunity which their competitors have seized.

Castings are accepted and used which vary so greatly in uniformity and quality that any other piece of material would be instantly rejected. This is not true of any other commodity.

For instance, a slight variation in the size or quality of cold rolled steel means instant rejection. However, some manufacturers tolerate castings which vary to a much greater degree.

This loss is made up of three distinct forms of excessive expense—(1) in laying out of work, (2) in time required to cut away unnecessarily thick finish pads, and

quired limitations. In actual shop-practice it is rarely practicable to apply such a method to detect flaws of this nature in advance of machining. When the ma-

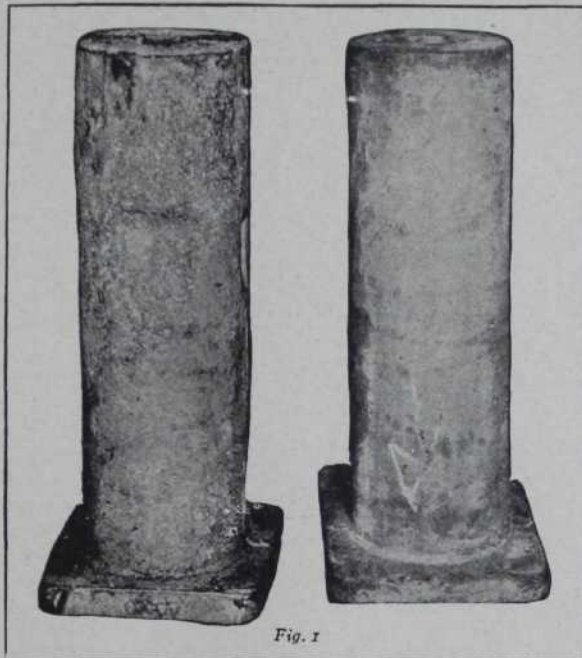


Fig. 1

(3) avoidable work on defective castings.

In the large photograph reproduced are two castings from the same pattern—one made by hand work, the other by machine-moulding.

It is obvious that the right-hand casting may be mounted in a jig and rapidly cut down to the required dimensions. The smooth and regular outline assures a uniform cut—meaning less wear on the lathe and more speed. The machine method of producing castings assures both the smoothness and the uniformity mentioned above.

The contrast with its neighbor is startling.

Uneven in outline, it is apparent that the depth of the shell of metal to be cut away varies greatly. The surface is irregular, pitted and of a texture that plays havoc with tools.

The most dangerous fact of all, however, is shown in Fig. 2 which indicates by dotted line the required dimensions of the finished castings against the solid outline of the actual castings as received. Note how this test betrays that the left hand casting is actually defective. Machining will disclose that it does not fill out the re-

quired limitations. In actual shop-practice it is rarely practicable to apply such a method to detect flaws of this nature in advance of machining. When the ma-

chine discovers such a flaw it is then too late to save the time he has wasted. Even though advance inspection of every dimension is not practical, it is possible to make a virtually complete elimination of this waste.

Specify machine-moulded castings.

Under machine-moulded production castings are strictly controlled to .0005 inch per inch of pattern draw. Variations such as are shown in the left-hand photograph are eliminated.

This extreme accuracy can not, of course, be accomplished by hand—it requires machines which have been accurately built. Faithful reproduction of the pattern can be secured by the machine only when slicking and patching of damaged moulds are entirely eliminated. This a machine can do—while a man can not.

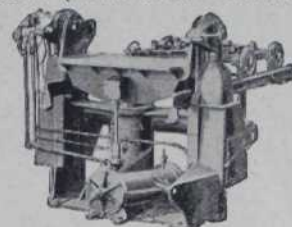
The result of this greater uniformity is best shown by actual production figures.

Records obtained from machine shops which keep accurate casting costs show an average decrease of 71% in defective castings after the shift to machine-moulding and a 17% reduction in machining cost.

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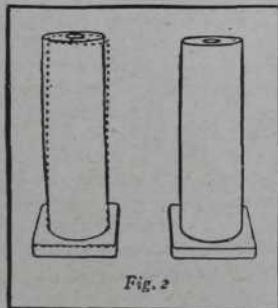


Fig. 2

The result is an unnecessarily high machining cost.



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wise, the letter is returned to him to be rewritten. Then you start running around the circle all over again."

The ex-government man was visibly amazed at this manifestation of ignorance. He tried a new tack:

"Don't you believe that the present method is justified if it results in collecting a few million dollars that otherwise would be lost?"

"Not if it costs a few millions to locate the errors."

"But look at the psychological effect it has upon the tax payers," the other argued. "If a man knows that his return will be carefully examined, it is exceedingly unlikely that he will neglect to include taxable items."

"To be sure," agreed the business man. "However, if the bureau had efficient auditors and a sensible system the errors would be detected at less expense."

"They have efficient auditors," the other explained. "In fact, there are training schools where the employees are instructed."

"If that's the case," the business man asked him, "why don't they place some responsibility upon the auditors?"

"Oh! You can't do that beyond a certain extent. Government employees come and go all the time. The labor turn-over is enormous. The figures run into the thousands. How can you place responsibility upon a person who may quit his job any time?"

"Perhaps the reason they resign is because they have no feeling of responsibility," hazarded the business man. "The very method pursued would hardly offer much incentive to a man to exert himself. Good Lord, if I didn't hold my employees responsible for every piece of work charged to them, where would I get off?"

Business—and Government

BUT there's no comparison between your business and the business of government," the ex-government employee explained. "The government's work must be handled differently. Why the very foundation upon which the nation is built is a system of checks and balances. It's all very well to talk about individual responsibility, but if one of these auditors errs, innocently or otherwise, and it is not discovered, injustice is done."

"Oh, I don't say that proper safeguards should not be set up to protect the interests of the public," the business man explained. "But I believe that the same result could be secured with less tape. Take these returns. Unquestionably the errors are reduced to a minimum. But beside the question of expense, consider the delay. I understand that it took one auditor fourteen months to audit the return of a certain packing company for the year 1917. Moreover, if it will take until 1922 to clean up the 1918 returns, that means work on the 1919 returns will not be completed until 1926, and that work on the 1920 returns won't be finished until 1930—you see the point? The delay becomes cumulative. Wouldn't it be worth something to the public to have its business dispatched more promptly?"

"Yes; and if Congress would only appropriate the money to hire more help. They need at least thirty more auditors right now."

"When you were a kid, did you ever play 'Ring-around-a-Rosie'?" asked the business man apparently of the air.

GLASS has been in use over several thousand years, but still shows new possibilities. Glass pavements are an old story in a French city, and glass telephone poles are now on sale in Europe.

INTERNATIONAL

Electric Job Time Recorders

EMPLOYEE NO. 1450		Name Frank Morgan		Date 11-21-19		Dept. 14	
ORDER NO. 16980		Day 11		Employee No. 0000		Dept. 0000	
PART NO. 1786		OPERATION 12		Part Iss. 0000		Oper. 0000	
FINISHED NOV 21 4.7		PIECES GOOD 54		Pieces Good 0000		Hours 00.0	
STARTED NOV 21 1.2				Earnings 00.0			
HOURS 3.5		RATE .55		AMOUNT \$1.93			
SIGNED J.B.M.							

NO. 42		NAME Charles Williams		DEPT. NO. 3	
TIME RECORD		ELAPSED TIME		ORDER NO.	
8 1919 NOV 21 5.0		1.5		Finish 2681	
7 1919 NOV 21 3.5				Start	
6 1919 NOV 21					
5 1919 NOV 21					
4 1919 NOV 21					
3 1919 NOV 21					
2 1919 NOV 21					
1 1919 NOV 21					
TOTAL					

DESCRIPTION OF WORK	
Face Ends	
Bevel Sides	

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57 City Road, Finsbury
London, E. C., England

Branch Offices and Service Stations in all Principal Cities of the World

Berlin Office:

International Time Recording Co., m. b. H.
Alexandrienstrasse 135 Berlin Germany

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77 Avenue de la Republique
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DURAND STEEL RACKS



WHAT is the nature of the commodity you handle?

Durand Steel Racks are equally adaptable to the storage of minute or bulky articles; small hardware, bars, billets, gears; dry goods or package supplies. They are scientifically designed to meet widely varying as well as fluctuating stocks.

Write our Engineering Department if you have stockroom problems.

DURAND STEEL LOCKER CO.

1511 Ft. Dearborn Bank Bldg.
Chicago

511 Park Row Bldg.
New York

Cotton and Cane for News Print

THE picture of a treeless United States is held constantly before our eyes by the earnest advocates of forest conservation. We are informed that we are cutting down our forests faster than we are growing them. We are told of tremendous wastes from the moment of logging right up to the time the hardwood floor is laid in the commuter's home. We are reminded that in 1918 and 1919 20,000,000 acres were swept by forest fires.

We see before us a vision of a treeless United States, whose inhabitants are sheltered only in tin-roofed, concrete houses and where the golden oak rocking chair of the mail-order catalogue is sold only to that man whose picture we used to see in the newspapers wearing a silk hat and a sack suit, decorated with dollar marks.

But chiefly the finger of shame is pointed at the newspaper, the magazine and the book. We are told by no less an authority than W. B. Greeley, chief of the Forest Service of the Department of Agriculture, that "one large daily which consumes 20,000 tons (of newsprint) a year requires for that brief period the product of a century's growth on 7,500 acres of eastern spruce forest."

As one authority in the lumber world puts it more picturesquely: "But what of the tree which after a hundred years of growth is cut down in its majesty for the purpose of conveying to a palpitating public an illustrated account of the latest disorderly conduct of the Katzenjammer Kids?"

Instead of answering that plaintive question let us look at a more cheerful side. From the south come encouraging reports of the use of various substitutes for wood pulp in the making of newsprint.

Searching for Substitutes

ONE such report comes from Florida where experiments have been tried with the native saw grass. The optimistic promoters insist that they can make better paper for comic supplements from this material than from that centenarian "cut down in its majesty."

Cotton linters are another possible source of paper. A report from Dallas is that a company is being organized to build a mill to make printpaper from linters, and will have a capacity of 20 tons a day, which would save 2,500 of those acres that Mr. Greeley sees despoiled each day for one newspaper. The development of this process was due to the war when the cotton-seed oil interests sought a new market for the enlarged linters industry. Other southern pulp paper mills are using cotton-seed hull fibers.

In France the sugar manufacturers are experimenting with the use of bagasse, the dried cane from which the juice has been extracted in the making of paper. The problem is not a new one. The bagasse can be transformed into stable cellulose which makes it usable in paper, but there are economic difficulties in the way. Expensive importation of chemicals would make the bagasse pulp handicapped in competition with the wood pulp of Sweden. Moreover, in places where coal is not available the bagasse is in too great demand for fuel.

England is turning to her tropical empire for new sources of paper. In India three enterprises are seeking to make pulp from the bamboos and savannah grasses. Thomas Nelson & Sons, the publishers, are building a mill near Calcutta and are talking also of doing part of their printing in India. The owner of the London DAILY TELEGRAPH is interested in a concession in Burma.

The First National Bank of Boston

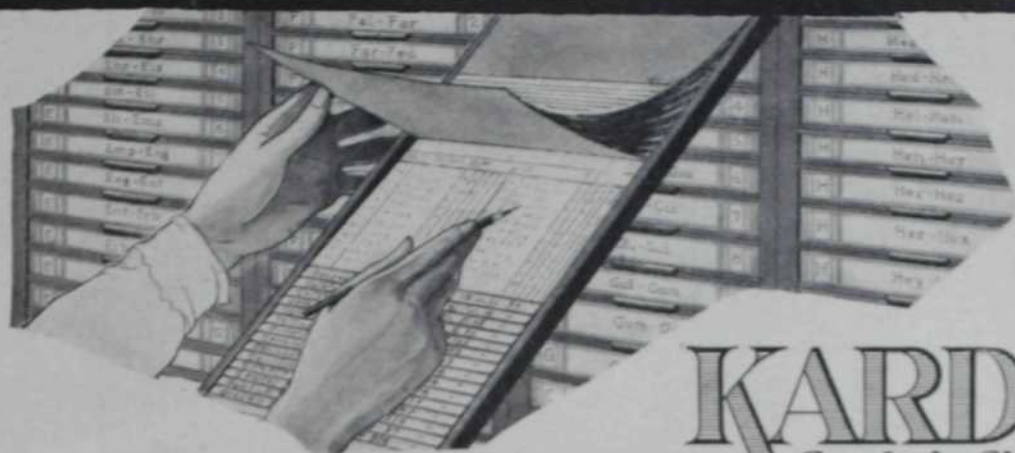
Capital,
Surplus and Profits
\$37,500,000

Deposits
\$185,000,000

Resources
\$265,000,000

Make
it
Your
New England
Bank

"Means increased sales - Elimination of disgruntled customers - a big saving in time." Metropolitan Coal Company



KARDEX
Cards in Sight

EVERY one of 80,000 customers of the Metropolitan Coal company, Boston, Mass., is in plain sight at all times, since this firm's sales and credit records have been put in Kardex.

A glance instantly locates any card—a flip of the finger exposes the entire card which shows past sales, dates and credit information.

A quick glance down the list gives an accurate picture of the sales situation. Colored signals over names in the transparent tipped pockets indicate those who have ordered. It is a simple method for following up customers who haven't ordered.

An executive of the Metropolitan writes:—"The value of keeping sales information in readily accessible form is almost inestimable, for it

means increased sales, the elimination of disgruntled customers and a big saving in time to those in the organization who refer to this information.

"Kardex equipment prevents lost cards and misfiling; saves time formerly lost by salesmen waiting their turn to check up an order when the cards were filed in drawers, saves money losses caused by extending credit because of cards being misplaced or lost; and makes filing easy."

Kardex is highly endorsed by thousands of the foremost executives in over 300 different lines of business, by many efficiency experts. Write for the complete Kardex story and send samples of cards you are now using.

Branch Offices:

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AMERICAN KARDEX COMPANY

Main Offices and Factory: Tonawanda, N. Y.

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"We have noted that our drivers work better on pneumatics—take more pride in their trucks, take better care of them, handle them better, work with better spirit. The quickness and safety enable us to use a better dispatching system. Our Goodyear Cord Tires are living up to their reputation for toughness."—H. A. Butterfield, Vice-President, Savannah Supply Company, Savannah, Georgia

TRANSPORTATION executives frequently report, as above, certain important advantages that accrue when their truck operators are assigned to units shod with Goodyear Cord Tires.

Since the smooth-going pneumatics both lighten his work and contribute to his comfort, it is natural for a driver to work with decided vigor and spirit on them.

His strength is conserved by their cushioning, his confidence is increased by their traction and his ambition is stimulated by their active and precise performance.

On the helpful Goodyear Cord Tires, he

finds opportunities to improve his routing and make more deliveries; to develop greater truck earning power and reduce operating costs.

And in the stamina of their Goodyear Cord construction, reflecting the manufacturing care that protects our good name, is found the intensely reliable basis of all these advantages.

Users' descriptions of how pneumatics have saved drivers, loads, trucks and roads can be obtained by writing to The Goodyear Tire & Rubber Company at Akron, Ohio, or Los Angeles, California.

GOODYEAR
CORD TIRES

John Bull, Shareholder

INVESTMENTS by the British Government in private corporations now total \$90,000,000, at par. Beginning a career as stockholder years ago by acquiring shares in the Suez canal from a distressed Egyptian potentate, the Government of England now owns shares in the following:

Anglo-Persian Oil
Canard Line
British Cellulose
British Dyestuffs
Bank of Siberia

Standard Shipbuilding
British American Nickel
British Parina Mills
Home-Grown Sugar
Turkish Petroleum

In some of these companies the government accepted payment in shares for money coming to it in connection with war contracts. In others it invested for national reasons, such as assurance of supplies and petroleum for the navy, promotion of essential industries, etc.

Why a Cost System?

IN a bulletin just issued under the title, "What a Cost System Should Do for You," the Fabricated Production Department of the Chamber of Commerce of the United States calls attention to the purpose and value of cost accounting.

"Accurate information regarding the various elements which go to make up costs," says the bulletin, "automatically eliminates arbitrary empirical or guess costs which prevail to a surprising degree among many manufacturers. Cost keeping brings to light inefficiencies in system by calling to attention the cost of its operation and points out equipment that has become inadequate by showing an excessive cost of product coming therefrom; it points out employees who are below the standard required and permits of performances being kept within certain limits by watching the accumulation of costs.

"Increased production depends largely on the intimate knowledge the management has of all elements in their manufacturing operations which can only be supplied through an adequate cost system. It enables them to establish proper control and increase output as warranted by the cost record.

"In many plants considerable sums of money are spent to establish a standard practice of operation. From time to time certain variations from the established standard practice occur, affecting costs in an adverse way. Timely cost reports showing what is happening, rather than what has happened, suggest immediate correction of such inefficiencies. It is not sufficient that executives know that expenditures are excessive; they should be supplied with information to show exactly where these excessive expenditures occur and take action. Definite responsibility for expenditure as the authority to make the expenditure should be fixed by an adequate system of cost accounting."

The bulletin takes occasion to say that part of the work of the Fabricated Production Department will be to assist organizations in obtaining for the industries they represent cost systems as practicable and as simple and uniform as possible.

"We shall not either devise or install cost systems," it says, "but by cooperative study of each situation, aided by the contributed experience of trade organizations and expert knowledge of the subject, help those who are disposed to help themselves."

DEMONSTRATION FARMS are in vogue for the promotion of agriculture. An engineer of the Bureau of Mines has now come forward with a suggestion for demonstration coal mines—for the benefit of operators, miners, and the public.



The First Complete System for Preventing Check Frauds

All common forms of fraud affecting the signer of a check are prevented by the Todd Anti-Forgery System—changing the names or endorsements; changing the amount; or forgery by "counterfeiting" or duplicating genuine check forms.

Protectograph Anti-Forgery System

backed by an iron-clad forgery-insurance policy, issued gratis to each user of the System, positively insuring *the user and his bank, jointly*, for an amount that amply covers the average daily bank balance. Additional insurance, if desired, may be secured by users of the Anti-Forgery System only, at a merely nominal premium.

The Protectograph Check Writer

writes and "shreds" the amount of a check in Dollars and Cents—(in words, not figures)—exact to the penny, in two vivid colors—a complete word to each stroke of the handle. (Todd Two-Color Patents.)

PROTOD Forgery-Proof Checks

drafts, and other negotiable instruments. Chemicals in the fibre prevent altering names or any written or printed portion of the document without instant detection. PROTOD is registered, accounted for and safeguarded like Government silk-thread bank notes. The well known watermark reproduced above identifies PROTOD.

EXACTLY FIFTY ONE DOLLARS SIX CENTS

Imprint of the Protectograph Check Writer Amount Line—Amount words red, denominations black. (Todd Two color Patents)

If you have any funds in charge—find out about the Todd Protectograph Anti-Forgery System—and insure your peace of mind. Send the coupon attached for full information, with samples of checks, also the vividly written story of how check swindlers work, by a famous "scratcher" now in State prison. Enclose your business card or letterhead with the coupon.

Todd Protectograph Co.

(TRADE-MARK REGISTERED)

(Established 1899)

World's largest makers of check-protecting devices and forgery-proof checks

1174 University Ave. Rochester, N. Y.



Todd
Protectograph
Company
1174 University Avenue
Rochester, N. Y.
FREE, Please send "Scratcher"
Sends a Warning and description of
the Todd Anti-Forgery System.

Name

N.B.10-20. (Enclose your business card or letterhead)



**A Gentleman
to see you, sir!**

Mr. Sim Plex--

that's his name—and he is a regular information bureau on everything you should know regarding the most efficient time-recording systems for Payroll and Production Costs.

Payroll Protection is one of his specialties

A booklet showing just how our product is being used in your line of business, together with another booklet on cost accounting will be sent you free of charge if you will check and return the coupon below.

Specific information is the only information worth while. You are not interested in time-recorders, but in what they will do to save you money.

You will find these booklets worth reading.
Specifications gladly submitted

Simplex Time Recorder Co.

Main Office and Factory

Sanborn and So. Lincoln Sts. Gardner, Mass.

- | | |
|-----------------------------------|-------------------------------------------|
| <input type="checkbox"/> FACTORY | <input type="checkbox"/> DEPARTMENT STORE |
| <input type="checkbox"/> GARAGE | <input type="checkbox"/> ELECTRO MAGNETIC |
| <input type="checkbox"/> PAY ROLL | <input type="checkbox"/> CHEMICAL WORKS |
| <input type="checkbox"/> BAKERIES | <input type="checkbox"/> SHEET RECORDERS |
| <input type="checkbox"/> DELIVERY | <input type="checkbox"/> HOW TO GET COST |
| <input type="checkbox"/> GENERAL | |

Name.....

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Branches:

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135 Fifth Ave.
400 Chestnut St.
508-509 Citizen's Bldg.
303-304 Renshaw Bldg.
30 No. Dearborn St.
516-517 Wells Fargo Bldg.
131 Oneida St.
High & Gray Sts.
528 Candler Bldg.
First National Bank Bldg.
22-28 East Jefferson Ave.
125 South Fourth Ave.
1636-1646 Champs St.
306 N. Ervay St.
712-B Houston St.
510 Camp St.

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Milwaukee
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Atlanta
Birmingham
Detroit
Louisville
Denver
Dallas
Fort Worth
New Orleans

How to Help the Car Shortage

The shipper shares with the railroad man responsibility for speeding up service and making full use of available equipment

THE EQUIVALENT of more than half a million freight cars can be added to the available car supply by closer cooperation on the part of all concerned with transportation, according to an open letter sent to industrial and commercial organizations by the Railroad Committee of the Chamber of Commerce of the United States.

The letter points out that there are but two ways in which the railroads can help or be helped, by increasing facilities or by making better use of what they have and lack of money and time makes the former impracticable.

"They must, therefore, the letter explains rely on making a maximum use of existing facilities and equipment, with the cooperation of all the other interests concerned—the shippers of freight, receivers of freight and railroad employees.

"You, as shippers and receivers of freight, can take a very important part in this movement. You can add 535,000 freight cars to the available car supply by loading your cars more heavily and loading and unloading them promptly. If the railroads were obliged to buy 535,000 new cars at the present price of about \$3,000 per car, it would cost them \$1,605,000,000 and would cost the public at least 6 per cent of that amount in the form of increased freight rates.

"The average freight car spends its time as follows: Thirty-seven per cent of the time in the hands of the shipper or the receiver; 43 per cent moving from the point of loading or unloading to the terminal where it is put into a train or onto a transfer track; 11 per cent in a train moving from one terminal to another; and 9 per cent laid up for repairs. You, as shippers and receivers of freight, can effect a substantial reduction in the 37 per cent; and the railroads can effect an equally substantial reduction in the 43 per cent.

"You can load and unload your cars promptly if you will. As a rule the railroads allow you forty-eight hours free time to load your cars and forty-eight hours to unload them before making any charge for demurrage. If you will use only one-half of this time, thus releasing your cars in one day instead of two, and in addition will order according to your loading capacity, restrict your car order to to-day's program, avoid the duplication of car orders, and avoid the use of cars for storage purposes, you should be able to reduce the time that the average freight car spends in your hands from 37 per cent to 22 per cent of its total time, and thus add 360,000 cars to the available car supply.

"The average freight car makes 20 round trips each year. By reducing the time needed for each trip 15 per cent, you will enable the car to make 23 round trips each year. This is equivalent to adding 15 per cent of 2,400,000 or 360,000 cars to the available car supply.

"The average capacity of the freight cars of the country is 41.6 tons. Some commodities, including coal, steel, ore, sand and gravel, can be loaded 10 per cent beyond the marked capacity of the car. Others, including the bulk commodities of various kinds, occupy a great deal of space without adding proportionately to the tonnage carried by the railroads. In loading commodities belonging to either of these classes you should disregard the prescribed minimum carload provisions for your

commodity and, if possible, load your cars to their maximum capacity.

"In 1919 the average load per loaded car of all commodities on all the railroads of the country, as a whole, was 27.8 tons—only 67 per cent of capacity. The railroads have now undertaken to attain an average of 30 tons per car. If you will cooperate with them and add an average of 2.2 tons to each carload, you will add nearly 8 per cent of 2,400,000 cars, or 175,000 cars to the available car supply.

"You can help to reduce the present excessive number of bad order cars. The last monthly report submitted by the carriers shows 7.4 per cent bad order cars in the United States as against 5.7 per cent at the beginning of federal control, an increase of 50,000 cars unfit for use and actually out of service. It should ordinarily be possible to keep the number of bad order cars below 4 per cent of the total number owned and, if that condition could be brought about today, it would result in immediately making effective on the railroads as a whole in the United States more than 75,000 cars that are now out of service because unfit to run.

"You can help the railroads to reduce the number of bad order cars by loading your cars carefully so as to avoid the injuries to the car that frequently result from the shifting of freight in transit."

Suggestions to Shippers

DO NOT order cars unless you are in position to load them promptly.

Do not order more cars from one or more railroads than will meet your actual requirements for the day's shipping program.

Where two or more railroads serve your plants, do not duplicate your order for cars but figure your requirements from each railroad so that the total will be equivalent to your total capacity to load.

When ordering cars, advise the agents of the railroads the total quantity in tons you have to ship for each destination so that the equipment of the necessary weight or cubic capacity can be furnished.

In all cases have your shipments prepared and ready for immediate loading on receipt of cars furnished. Place your shipments in the car so as to permit prompt unloading at destination. See that packages are so loaded that damage in transit will be eliminated.

If you are making daily shipments of less-carload freight to the same territory and loading to a transfer point, hold your shipments until the second or third day in order to make a straight carload and bill through to destination. Your freight will receive quicker movement and rate will be less if handled in carload lots.

Should the loading of a car not be completed at the usual time of closing, it is very desirable to work a little overtime and finish the loading as this will expedite the movement and delivery of your consignment.

Consult the railroad agent or yardmaster and decide on the time of day to have loaded cars ready to remove from your industry in order to fit in with the departing time of the trains on which your shipments will go forward. By keeping in touch with the agent or yardmaster the movement of your cars will be expedited by finishing the loading to

Making Dictograph Spell Production

The General Electric Company, under date of August 11, 1920, say that without the Dictograph, "Our work would be harder, more expensive, and our capacity to perform would be reduced."

NO manufacturer can reach the maximum in production, whose system of intercommunication is not 100%. The time lost by use of the old-fashioned messenger system or ordinary telephone mounts up production costs for every executive and employee in the organization.

The manufacturers who are making Dictograph spell production have installed the Dictograph System of Interior Telephones, the quickest and most efficient means of intercommunication ever devised.

There's no operator, no busy wire. The man Higher-Up sits at his desk, and yet is "all over his plant," keeping every man at his best, through the Dictograph.

He gets one or half a dozen men at once—holds conferences, gives orders, gets information—all without calling a single man from his department.

And not only does the Dictograph keep the Executive in touch with his men, but it gives every department instant, automatic communication with every other department.

The Dictograph System is installed under a most liberal three-year service and maintenance guarantee. Its first cost is practically its only cost.

It is well worth five minutes of your time to see the Dictograph demonstrated on your own desk. It puts you under no obligation.

For the busy executive, we have prepared a 10-minute Essay on Executive Efficiency. A Signed Copy with my compliments is awaiting you; simply send in the Corner Coupon on your letterhead.

C. H. LEHMAN,
President.

*50,000 Busy Executives use the Dictograph
System of Interior Telephones*



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Executive Offices

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DICTOGRAPH PRODUCTS CORPORATION 220 West 42d St., New York City

Check one of the squares

- ☐ **Free Booklet**—You may mail "An Essay on Executive Efficiency," which analyzes the problem of intercommunication.
- ☐ **5-Minute Demonstration**—You may give us a 5-minute Demonstration of the Dictograph, with the understanding that it places the undersigned under no obligations.

Name _____

Address _____

ATTACH TO YOUR LETTERHEAD N. B. Oct. 1920



How About a Budget System

FOR YOUR HOUSEHOLD EXPENDITURES?

THE NATIONAL FAMILY EXPENSE BOOK has rulings and special forms for keeping complete records of daily expenses, which can be totaled at the end of the month. This enables the housekeeper to make exact records of all expenditures and receipts and know at any moment the balance of cash on hand and the amounts expended for the various items.

THE LOOSE LEAF MEMO is the ideal way to preserve notes, addresses, data, cash account, business and personal matters—all in the same cover, properly indexed, so that any subject may be found without loss of time. These items which are prominent in the National Line may be obtained at your stationer's. Ask for National Blank Books and Loose Leaf Devices.

Send for free copy of "GOOD FORMS FOR BOOKKEEPERS" showing hundreds of ready ruled and printed forms for accounting.

NATIONAL BLANK BOOK COMPANY

18 RIVERSIDE

HOLYOKE, MASS.

suit the daily program of the switching crews that gather up your loads from your or other industries. It is necessary to have regular hours for switching crews to do the work at certain industries to accomplish the best results for all concerned.

Furnish the billing agent full instructions that will permit the way-bill to be made up to move your shipments before the loading is completed if possible and in all cases before load is removed from your industry.

Consign your shipments to final destination wherever possible and discourage shipments that would require changing destination in transit, bearing in mind that any change in the original billing instructions of a car must of necessity cause delay to equipment whether reconsignment or diversion is received before or after car reaches original billed destination.

The use of bills of lading should be confined to a transportation instrument limited in its effect to a receipt for property or a contract for its transport, and stripped of its financial attribute under which it can be made a commercial instrument.

Should the destination of a shipment you desire to make be covered by an embargo, (which should in all cases be determined before ordering cars) do not try to avoid the embargo by billing shipments to an intermediate point with the expectation of reconsigning into the embargo district.

Do not bill shipments via a circuitous route in order to avoid the effect of embargoes or to favor particular roads.

Load heavy commodities in all cases up to ten per cent in excess of the marked carrying capacity of each car, unless by special instructions or markings on cars loading in excess of ten per cent in which cases advantage cars should be loaded to, but not in excess of, such allowance. Light weight or bulky freight should be loaded to full cubical capacity of each car.

The average time consumed by shippers of freight in unloading cars is about two days per car indicating that shippers generally work to the plan of not releasing equipment for their own or other shippers' use until expiration of the free time allowed under demurrage rules. A reduction in time consumed loading equipment will make available a very large number of cars and assist materially in moving freight for shippers in distress for want of equipment.

Suggestions to Freight Receivers

WHEN possible, purchase whatever you consume or sell with the object of securing it from the nearest place where what you require can be obtained. This will reduce the demand on railroads for freight car equipment, lessen the time required to secure the shipment and prevent unnecessary cross-haul of the same character of freight. This policy, followed where practicable, will release thousands of cars to serve yourself and other shippers.

When ordering carload shipments of whatever character, have it understood by the shipper that the full, safe-carrying capacity of the car must be utilized. Adapt your storage capacity to accommodate the quantity possible to load in the largest freight car. Place orders for shipments less frequently if necessary to insure a full carload being justified.

Should it be entirely impracticable to use a full carload of some particular character of freight consult with others in similar need and arrange for pooling the shipments of two or more that would insure securing one full carload.

Unload cars consigned to you quickly,

"On this basis

You get just what you pay for
and pay for no more than you get"

Wells Brothers

∴ ∴ ∴ Builders

Banks, Hotels, Office
Buildings, Factories,
Warehouses, Stores—
any structure in steel or
concrete.

A BANKER and business man whose interests we have served for thirty years made the above answer to an architect's query concerning the Fixed-Fee plan. His letter closed:

"Pardon me for writing you at length concerning this company, but my experience with them has been so satisfactory and I feel so confident that they will render satisfactory service that I feel justified in recommending them so highly."

An architect of national recognition, for whom we have handled eleven separate contracts, wrote:

"In view of the fact that the contractor's attitude toward the building is substantially professional, the same as an architect's would be, and that the client is simply purchasing the contractor's knowledge, ability, and organization, and is paying him only for service, it therefore becomes necessary to select a contractor of known ability and integrity, with a proper organization and with a proper jealousy for his standing in the construction industry."

*Send for folio of letters
bearing upon the Fixed-Fee
relation in building construction.*

You have building needs. You want expeditious, economical execution. Tell us your problem.

"Wells
Built
means
Built
Well"

Wells Brothers
CONSTRUCTION CO.
MONADNOCK BLOCK CHICAGO

Builders
in
Steel
and
Concrete

"Permit Us to Present"

A well-mannered introduction is always an asset when representative people are to be approached.

That's why, in our initial appearance in the columns of *The Nation's Business*, we quote a concern who has long since "won its spurs" in your recognition.

The Square D Company says:

"Select-O-Phone service as used by the Square D Company, is absolutely without criticism. We find it very convenient and reliable."

The Select-O-Phone system of interior communication is already installed successfully in a host of establishments of a wide variety of kinds. Some of these must almost, if not actually, parallel your intercommunicating requirements.

Briefly, Select-O-Phone's selling points are these:

- | | |
|--------------------------------------------------|-------------------------------------|
| —an automatic interior telephone and man-finder. | Strict Privacy. |
| 5 to 33 lines, plus extensions. | Permits conferences. |
| No operators. | Executive right of way. |
| No cables. | Improves and frees outside service. |
| 24-hour service. | Stations added or moved easily. |

Ask for anything from a Booklet to a no-obligation demonstration on your premises.

The Screw Machine Products Corporation

200 Thurbers Ave., Providence, R. I.

By invitation, a member of the Rice Leaders of the World Association.



bearing in mind that every hour lost in releasing a car from its load prevents you as well as some other consignee from getting the benefit of additional service in movement of other consignments.

In placing orders for your shipment in large quantities arrange for the forwarding to be equal only to your daily capacity to unload. This will avoid congestion at originating points, at intermediate points, and at destination.

Should your shipments move under "Bill of Lading" arrange to present the bill of lading to the railroad agent before arrival of the cars as this will insure prompt placing when received.

Complete unloading of cars before usual switching time if at all possible, otherwise working your force a reasonable amount of overtime if necessary to accomplish this in order that cars may be switched out at the earliest possible time.

Where the College Leaves Off

RECOGNIZING the growing demand for trained business administrators, the General Electric Company of Schenectady, N. Y., has established a business training course for college graduates without a technical education. The course will include also graduate-of technical colleges employed in the company's testing department. The course aims to give training in the principles of high accounting; to explain the essential elements of business law made necessary by government supervision of corporation, the tax laws, and other complexities of modern economic life; and to apply this general knowledge concretely to the business of the General Electric Company, intricate owing to the size of the organization, the volume of sales and the wide range of the articles manufactured.

The General Electric Company now employs in its technical departments from 400 to 500 college graduates every year. Students from twenty foreign countries are in the enrollment.

The International General Electric Company, Inc., a separate corporation recently formed to handle the foreign business of the parent concern, plans a similar course for students who will represent it in the foreign field.

Hustling for Themselves

ONE disquieting effect of the high prices of American manufactured goods and the difficulty experienced by oversea merchants in obtaining deliveries is the stimulus given to the industrial development of countries which, but for the war, would have found it quite impossible to compete with the highly organized industries of the United States and Europe.

During the war many industries quite new to India arose to fill the void left by the stoppage of exports from Britain, and many types of machinery and mechanical fittings are now being successfully manufactured there. The Bengalee is a capable artisan when properly trained, and it is hardly necessary to add that his labor is not of the highly paid variety. The development of a prosperous iron and steel industry in the Transvaal—where coal and iron ore in inexhaustible quantities exist in juxtaposition—is already becoming practicable. In Australia, too, the manufacture of woolen goods is attracting increasing attention.

ELECTRIC SHOCK KILLS EVANSKY

Abraham Evansky, of 406 Monroe street, a driver for the L. J. Brown Company was almost instantly killed early this morning when he attempted to turn on an electric switch in a small ice cream store on First street, Hackensack.

Evansky entered the store for the purpose of delivering some cream. The interior of the store was rather dark and knowing the whereabouts of the switchboard, he tried to turn on the lights.

His hands were wet, and in so manner he must have had one hand on the switch while the other came in contact with the current.

Evansky was unable to disengage his hand from the switch. As a heavy electric shock passed through his body, he screamed for help.

Another man in the store attempted to release him but his efforts proved useless. Before the electricity



Groping through darkness, he found —the exposed knife switch

Clutching, clinging, he held it—until death

GROPING, feeling his way slowly through the darkness ahead, he reached the switch . . . but—

His hands were wet—it was an exposed knife switch. He grasped it—he couldn't let go. The heavy electric current, shooting through his body, held him . . . until death.

All over the land protest is going up.

From everywhere an outcry, in ever-increasing intensity, is heard against the needless waste of life and property caused by the exposed knife switch.

Fire marshals are ruling against it; safety officials are branding it as dangerous; labor unions are denouncing it; electrical societies are condemning it; architects and contractors are blacklisting it; from every side comes the demand from authorities—the exposed knife switch must go.

State Fire Marshal H. H. Friedley, of Indiana, in ruling against the exposed knife switch, describes it as "one of the most prolific causes of loss of life and property." John S. Horan, State Fire Marshal of West Virginia, has called it "one of the most dangerous fire and accident hazards in existence."

A total of "\$1,183,674 was lost in Michigan during the year 1919, by fires due to defective installation of wires and carelessness in attending," says Fire Marshal Frank H. Ellsworth, of Michigan. Fire Marshal L. T. Hussey, of Kansas, has joined these progressive States with a similar ruling "to protect the lives and property of the State of Kansas."

The Western Association of Electrical In-

spectors, in convention at St. Louis, January 27, 28, and 29, 1920, went on record without a dissenting vote as being in favor of the use of enclosed switches.

The Square D Safety Switch

The Square D Safety Switch is an absolute safeguard against shock, fire, and industrial accident of any kind.

It is a simple knife switch in a pressed-steel housing—externally operated. A handle on the outside does all the work.

Current cannot reach that handle, nor the box itself—tough, rugged insulation completely isolates all live parts. They are safely enclosed within steel walls.

The switch may be locked in the open position, too, while work is being done on the line; nobody can thoughtlessly turn on the current. This feature is saving many an electrician's life. "On" and "Off" positions are clearly indicated. The Square D Safety Switch is made in over 300 sizes, types and capacities—for factories, office buildings and homes.



The dangerous exposed knife switch



The Square D Safety Switch

The greatest remaining hazard around an electrical installation—the exposed knife switch—is going.

All over the country progressive firms—leaders both in employees' welfare and in efficient production—are safeguarding the lives of their workmen and their property by replacing all old-style exposed knife switches with Square D Safety Switches. Prominent among them are:

Nordyke & Marmon Company
Carborundum Company of America
Allis Chalmers Company
Sinclair Refining Company
Texas Company
Rock Island Lines
Sperry Flour Company
Eastman Kodak Company
Bethlehem Ship Building Corporation
Union Switch & Signal Company
Standard Steel Car Company
Aluminum Ore Company

Listed as standard for both fire and accident prevention by the Underwriters' Laboratories of the National Board of Fire Underwriters. Meets the requirements of the National Electrical Safety Code of the Bureau of Standards, Department of Commerce, Washington, D. C.

Installed by your electrical contractor-dealer

Architects and engineers are listing it as standard equipment. Ask any of them for further information—or write us direct.

Act NOW and protect your workmen, your family and your property against fire, shocks and other electrical hazards.

SQUARE D COMPANY

1400 Rivard St., Detroit, Mich.
Canadian Factory: Walkerville, Ont.

The Metal of Many Names

It's true title is "zinc" but it works under so many aliases that it often fails to get the recognition it deserves

By DANIEL HENDERSON



Whose Fault?

Failure to make modern goggles a part of workers' equipment usually settles the issue. The employer is liable for eye accidents.

Prudent employers are going out to meet their eye-accidents and stopping them before they arrive. Your only protection is effective goggles made so comfortable that your men will wear them.

Your men will like
Willson Goggles



Style L31, the Willson All-Purpose Industrial Goggle, is designed for comfort and then built for strength. Adjustable, rust-proof, and all parts can be replaced with the bare hands. "L31" is for work involving any degree of eye-risk, from heavy chipping to the lightest operations. Approved by The Underwriters' Laboratories.

Have you a Willson Catalog?

**WILLSON
GOOGLES INC.**

Factory and Main Offices, Reading, Pa.

Branch Offices in New York,
Pittsburgh, Chicago, San Francisco,
Toronto, Sydney and Buenos Aires.

JONES knew little and cared nothing about zinc. He knew that his mother kept a sheet of it before her kitchen range. He remembered having seen his uncle put a sheet of zinc back of a hot stove, but this was the extent of his knowledge.

Jones, when the United States entered the World War, became a member of the Indiana State Council of Defense.

One day he was sent to a zinc rolling mill to assist in removing an obstacle to production. On that visit his vision was so broadened as to the field for zinc, that when the war was over he quit his law books and became a zinc producer.

He found out that zinc had been serving the public for centuries but that it received slight recognition because its many duties had been done under other names. As an ore, it was called "Jac," or "Sulphide"; as a pig metal, it was termed "Spelter"; when it was combined with other metals, its name was "brass" or "bronze"; and when it was used to preserve a steel sheet or wire, it was called "galvanized." Nowhere was it called by its rightful name, "zinc."

"Up in Duluth," Jones testified before a convention of zinc producers, "I found a store fixture manufacturer who hesitated to use zinc sheets to line the boxes that would later on contain dried fruits, fearful that the zinc would in some way contaminate the food product. He, therefore, lined his containers with 'galvanized' steel sheets, not knowing that the sheet had merit only as it was given to it by zinc."

"I found a workman in a 'galvanizing' room in a wire mill, who, after twelve years of service, awakened the suspicion that the 'spelter' contained zinc."

"I know of a railway rate clerk who had shipped 'spelter' for years, but could not find a classification for 'slab zinc.'"

"The world has a hundred instances of like import. It does not know zinc by its right name."

Zinc was used in making brass many years before it was recognized as a separate metal. To the Chinese goes the credit of first extracting zinc from its ores. Zinc smelting began in the United States in 1850, but as a separate industry it lagged until the World War revealed the many ways in which it could be used. When the scarcity of copper and tin arose along came zinc to fill the gaps. The zinc companies of the United States increased their plants enormously to meet the Allies' war demands. Few people know that one of America's purest deposits of zinc ore is found in the eastern state of New Jersey at Franklin.

One of the ironies of war was that while a Belgian, Dony, originated the process for zinc smelting that is now in general use, it was his country that first suffered for the lack of it when war came.

Ninety-nine Americans out of one hundred had never heard of zinc as a war necessity, yet when we entered the war, our zinc manufacturers were called upon to supply it for a hundred uses. As copper and other metals grew scarcer, zinc was the reserve force that saved the day.

First, zinc was needed to mix with copper

and form the brass for the shells of the projectiles.

Then oxide of zinc began to perform a great and valiant work. All of the rubber tires on the trucks used to move military supplies to the battle fronts, as well as on the much-used and sorely-needed ambulances, were made in part from zinc oxide. The steel on our battle-ships, and the transports that conveyed our armies to and from the shores of France, were protected by paint in which zinc oxide was a basic element. Zinc oxide was also called on to play a part that comes closer to our hearts. The doughboys who received wounds at Chateau Thierry, Belleau Woods, Cantigny and other glorious battle-fronts were treated by the surgeons with ointments and dressings largely composed of this product! Do you know too that it was used to protect and heal our men from the burns of poison gas?

It was by burning zinc dust that the smoke screens were made which hid our ships from the U-boats, and that enabled our forces on the battlefield to protect their positions from the enemy's shells.

Lithophone, a zinc product, did its bit by serving as paint for the interior of countless government buildings during the war, and worked so well that it received, as an award of merit, a place in the Government's official specifications.

As a Preservative

ZINC chloride was a preservative for railroad ties, at a time when no labor was available to procure and lay new ties. It rendered splendid service in the manufacture of dry batteries and disinfectants.

A good share of the zinc reserves of Mexico is owned or controlled by citizens of the United States, so that the United States actually controls more than a third of the zinc reserves of the world.

More uses for zinc exist than have yet been dreamed of in the American business man's philosophy. Where higher-priced metals are being used, simply from tradition or habit, zinc will do just as well. Germany, since the war, has employed it for more purposes than was ever imagined previously. It is a wonder that we have not heard of the Kaiser awarding zinc crosses instead of iron crosses. For many things, the plentiful and cheap sheet zinc serves as well as copper, and zinc casting as good as brass. For instance, our War Industries Board found that sheet zinc was a splendid substitute for galvanized iron or steel for refrigerator linings, and gave orders for its use.

American home-builders have yet to realize that in Europe, zinc has for many years been used for roofing. The tourist who takes the trouble to inquire about the roofing of old cathedrals abroad will find that the material is zinc, and that the sage and thrifty builders of the old world selected it, not only for its cheapness but also for its durability and permanence.

What the Conservation Division of the War Industries Board felt is shown by these paragraphs from one of its reports:

The possibilities of increasing the uses of zinc are very large, particularly in the case of rolled sheet;

in this country the rolled zinc produced has never been more than 10 per cent of the production of spelter, while on the continent of Europe many of the largest producers roll 50 per cent to 100 per cent of their output.

The largest tonnage uses of sheet zinc in Europe are for roofing, cornices, architectural ornaments, gutters, leaders, and flashing, all of which are more durable when made of zinc than when made of galvanized iron or tin plate, as is usual here. In all of these cases painting is unnecessary except where desirable for decoration. In the few cases when zinc roofs have been used in this country they have remained in good condition, for forty or fifty years, though entirely unpainted.

Zinc, both cast and rolled, can be substituted for other metals in many cases. Possibly the increased use of castings is even more important.

There is now in New York City a great office building in which all of the decorative metal work is made of zinc, or an alloy of zinc. With the exception of the plumbing, all of the grills and finishings are made of zinc. Cornices, ceilings and other fancy sheet work heretofore made of copper and steel can be readily made of zinc at a marked saving in cost.

And It Helps the Farmer

WHO ever thought that a zinc by-product could help the farmer to grow better crops? If such is the case, now is the time to make use of such a discovery. The ruined fields of Europe must again be made productive, and the land of America must be made fertile to produce food for both the world and our own ever-increasing population. Well, sulphuric acid, which is derived from zinc smelting, is an essential element in the manufacture of fertilizer and can be used in this industry and in other important industries vastly more than it has been used in the past.

We are starting up new dye industries, so that we will not be dependent on European dyes if another period of commercial upheaval comes. Zinc dust, formerly imported by us from Europe, is now available in large quantities for our dye-makers.

Zinc oxide so pure as to be used for medicinal purposes is produced from the zinc ore of New Jersey. This was the principal material in Sag Paste, which our fighting men spread over their faces to protect them from mustard gas. Spell "sag" backwards and you have "gas"!

Not only the zinc industry of America, but every other line of business, can profit by the way in which the Vielle Montagne Company of Belgium educated the people of that country in the use of what was then almost an unknown metal. For many years, this company maintained a museum at Angleur, a suburb of Liege, in which the hundreds of uses for zinc were exhibited. Full size specimens and models were shown, as well as specimens illustrating the various steps in the process of making the finished articles. In addition the company employed lecturers to explain the uses of zinc to trade and commercial organizations. As a result of this educational work the European trade schools teach the methods of working zinc.

Building a Capital to Measure

A NATIONAL CAPITAL, made to order from the ground up, was decided upon by Australia a number of years ago, but the plans were held up until the business of the war was completed.

Now Australia is turning again to its project for a capital. It is appointing a commission to get up the detailed plans and estimates. Among the problems are ways and means to attract private investors to erect a thousand houses in which officials will live.

United States Shipping Board Emergency Fleet Corporation

HOG ISLAND SHIP YARD FOR SALE

The Yard Is Near Philadelphia, Pa.

Sealed bids will be received up to October 30, 1920, 10 A. M., in offices of the U. S. Shipping Board Emergency Fleet Corporation, Supply and Sales Division, Sixth and B Streets S. W., Washington, D. C., and then opened in the office of the Board in the presence of the CHAIRMAN.

HOG ISLAND HAS

an area of 946 acres, water frontage of two miles, 27 warehouses, approximately 86 miles railroad tracks, 21 miles of Roads, 50 Shipbuilding ways, sewerage and drainage, 7 steamship piers, administration, record and telephone buildings, shop buildings, power, air, electric, steam, water and oil lines, classification yards and fire protection.

The four-story concrete warehouse and the twenty-six wooden warehouses have a total floor area of approximately one and three-quarter million square feet. Each warehouse is served by a railroad track and has a platform adjoining a street for its entire length.

The wooden warehouses are equipped with brick fire walls every 80 feet and fire protection.

The 86 miles of railroad tracks serve the 146 acres of Material Storage Yards, designed for the storage of any material that can be left in the open. The seven outfitting piers are one thousand (1000) feet long each and one hundred (100) feet wide. Each pier carries four railroad tracks of standard gauge with the necessary cross-overs in addition to two Gantry crane tracks.

Each of the piers is equipped with four self-propelling Gantry cranes with sufficient clearance to permit the operation of standard locomotives and cars. In addition each pier is equipped with two locomotive cranes, and Pier B with a bridge crane, span of 118 feet and lifting capacity of 100 tons. Between piers there is 266 feet of clear water space, which permits the docking of four ships in each slip.

Each pier is provided with high pressure water mains, fuel, oil, electric and compressed air lines.

The storage yards are wired for electric light and piped for water and air.

There are 50 ways—40 wood, 10 concrete—each equipped with fixed stiff-leg derricks. Hog Island also has 10 electrically equipped pumping stations, 75 miles overhead wiring, over 75 miles underground cables, 45 miles fibre duct laid in concrete. Filtration plant, sewage disposal plant, which, with the other appliances, facilities and equipment, undoubtedly provides it with the fundamentals for a modernly equipped terminal and storage yard.

Detailed inventory, blueprints, photographs and other data have been filed in the office of the Director of the Supply and Sales Division, 6th and B streets, S. W., Washington, D. C., and may be seen by prospective bidders during business hours. Permits for inspection of the yard may be obtained on application.

Bids must be submitted in duplicate on standard proposal forms, made in the manner designated therein and inclosed in sealed envelope marked "Proposal No. 2007, not to be opened until October 30, 1920."

Proposal forms may be had at any of the sales or district sales offices. Bids must be accompanied by certified check, made payable to the United States Shipping Board Emergency Fleet Corporation for \$1,000,000.

This amount will be applied upon the purchase price to be paid by the successful bidder, but in the event that such bidder fails to consummate the contract of purchase the deposit will be forfeited to the corporation. The balance of the purchase price is to be paid within a reasonable period, not exceeding in any case five years from date of sale. Bidders must be American or American controlled. Preference will be given bids covering short period of payment, other things being equal. Possession of the property will be given upon completion of the present ship construction program, about February 1, 1921.

Title to the property will remain in the United States Shipping Board Emergency Fleet Corporation until full purchase price has been paid.

The Corporation reserves the right to reject any or all bids.

United States Shipping Board
Emergency Fleet Corporation

W. S. BENSON, President.

Tycos

TEMPERATURE INSTRUMENTS
INDICATING - RECORDING - CONTROLLING



VERITY

NO product can be brought to a state of perfection, or even economically produced, without the systematic use of dependable temperature instruments.

The world-wide use of Tycos Temperature Instruments in every branch of industry is proof positive of their reliability, their scientific exactness.

Tycos precision is further evidenced by the fact that manufacturers whose specifications are most rigid are consistent Tycos users.

There are three distinct types of temperature instruments bearing the Tycos mark—Indicating, Recording, Controlling. Among them lies the direct solution of your temperature problems.

Tycos Products include:

- Indicating Thermometers
- Recording Thermometers
- Controlling Thermometers
- Pyrometers
- Pressure Gauges
- Vacuum Gauges
- Time Controls
- Hygrometers
- Hydrometers
- Barometers
- Thermographs
- Altimeters
- Oil Test Instruments
- Household Thermometers
- Actinometers
- Laboratory Glassware
- Compasses

Taylor Instrument Companies
ROCHESTER N.Y.

There's a Tycos or Taylor Thermometer for Every Purpose

The High Cost of Choosing

By HOMER HOYT

"STANDARDIZATION" is the "open sesame" to an unsuspected store of national wealth which can be used by the nation to double our productive power. To secure its blessings we must forego the luxury of a vast profusion of brands and an excessive individuality of style, we must abandon our faith in the infallibility of competition and supplant the Sherman Anti-Trust Law with a policy of toleration of industrial combinations under proper government regulation. This was the price we paid during the war and it is the price we will have to pay in peace.

American industry before the war was characterized by an almost utter lack of standardization. A bewildering array of styles and brands were displayed in our national shop window. No Oriental Sultan ever exercised the power over the goods of life possessed by a simple American citizen. American manufacturers offered a multitude of styles to the prospective purchaser. Unlike the fabled Procrustes, who forced all his guests to fit into a bed of unvarying dimension, American bed manufacturers offered iron, wood and brass beds of manifold sizes and designs and as a special inducement to the victims of insomnia they offered 500 different kinds of bedding. No autocratic council of artists or painters ever sat in America to determine the national color scheme, for the American householder had the right to paint his house and fence in any one or more of the 100 shades. An American homebuilder could order the exterior of his house to be fashioned of marble, limestone, cement, stucco or one of the thousand varieties of face brick and he could spend his lifetime examining samples of wall paper.

No Lack of Variety

THE discriminating judge of chairs had 518 patterns of piano stools and a countless legion of ordinary chairs from which to make his choice; the number of styles of dining tables, parlor sets, chinaware, etc., baffled the enumerators. Even the instruments of production were developed into many species. There were 287 sizes and styles of automobile tires. The fastidious farmer could select a disk harrow from one of 589 kinds, the connoisseur of plows and cultivators could probably be satisfied by some of the 312 styles or buy a planter or drill out of an assortment of 784 kinds. If a farmer's buggy wheel broke down, he had to hunt among 232 varieties to match the shattered wheel. Thus, from the 150 kinds of corsets to the 500 varieties of stoves and the 6,000 kinds of pocket knives and cutlery, ran the array.

The very extent to which we succeeded in the war just ended was indicated by the progress of standardization. The faults in our early airplanes and the delay in devising a standard motor; its eventual success consisted in the adoption of the standard Liberty motor and the quantity production of the De Havilland 4-type of airplane. The criticism of our early shipbuilding program was laid at the door of the controversy as to what kind of ships to build; its crowning success lay in the standardization of steel plates.

Standardization was accomplished during the war only by pooling industries. The adoption of any plan for standardization presumes a uniform practice within the whole industry, because if one firm insists upon producing one brand of goods while its rival produces another brand the object of standard-



SEVEN ACRES for SELLING

The largest department store in Wisconsin is the Boston Store of Milwaukee; a progressive establishment with 7 acres of floor space employing about 1,200 sales persons. It has served Wisconsin residents for twenty years.

So much for statistics. How about success?

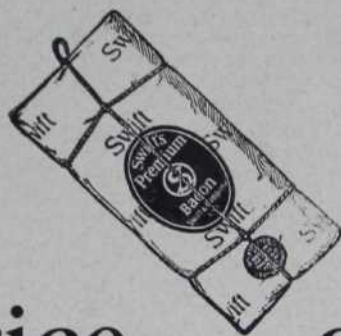
Well, in December 1918 the Boston Store announced that it intended to increase its business a million dollars in 1919. In July 1919, just a trifle over one half the time specified, the one million dollar increase had been attained. That's merchandising.

What has this to do with The SPERRY & HUTCHINSON Co.? Only this.

Back in 1904 *S.N.* Green Stamps were introduced by this concern as the most practical and soundest method for rewarding those customers who put cash on the counter instead of names on the books.

Sixteen years have passed, but the little *S.N.* Green Stamp goes on building sales on every acre of the seven. It sows the seed of good-will from which steady, pleased patronage grows.

THE SPERRY & HUTCHINSON CO.
114 FIFTH AVENUE NEW YORK



The Price of Bacon

Some people wonder why the price of the best quality bacon is so much higher than the price of live hogs.

The answer is:

1. From every hundred pounds of live hogs we buy, we get only about 72 pounds of meat and lard.

2. The choice cuts—bacon, hams, and pork loins—are only about one-third of the whole animal. They must bring prices much higher than the price of hogs to offset the low prices we get for many of the other cuts. Otherwise we couldn't stay in the pork business.

3. Only about 8 pounds out of every hundred pounds of live hog can be made

into fine bacon like Swift's Premium. Only half the hogs we can buy are suitable for this brand: hence only about 4 per cent of the total live weight of hogs we buy is sold as Premium Bacon. Other bacon is sold at much lower prices.

4. There is an extra expense of about 8 cents per pound in preparing Premium Bacon, due to careful trimming, curing, smoking, and shrinkage. This extra expense is nearly as much as we get at wholesale for some of the cheaper cuts.

The various cuts not only bring different prices, but changing demands cause these prices to vary with respect to each other. One cut may have the call, with prices of other cuts ranging lower. For example, fancy bacon has been in heavy demand during the summer of 1920, and the price has not fallen with the price of hogs. But lard has dropped about 45 per cent at wholesale and dry salt pork has dropped about 35 per cent.

These prices are utterly beyond our control; bacon may come down at any time, and lard, or some other cut, go up.

But you may rest assured that competition, at all times keen and active, keeps the average return from all cuts down to a point which allows us less than one cent per pound on all pork products sold.

Swift & Company, U. S. A.

Founded 1868

A nation-wide organization owned by more than 35,000 shareholders





OUR IDEAL

*the Best Service
we can Give You*

THIS experienced firm of architects-engineers works to one ideal—to design buildings for greatest production (or usefulness); fewest accidents; best health; of good style; and of best ultimate economy.

We are a service-rendering organization—we do not construct. We design and supervise construction.

Without a selfish interest in any material, or equipment, or construction, we are in a position to get competitive estimates from contractors.

We are not fettered, yet we are bound to give unprejudiced, fearless, generous service in designing and supervising.

The development of our ideal has brought together an engineering staff of high ability, broad vision, and a desire to serve that has become a habit.

MONKS & JOHNSON
ARCHITECTS · ENGINEERS
BOSTON NEW YORK
99 CHANCY STREET 50 EAST 42ND STREET

ization would be defeated. There must be a combination, therefore, in order to enforce standards upon the entire industry.

In Germany combination among industries was brought about by government compulsion, but in this country the necessary degree of combination was attained by the industries themselves through their War Service committees under the aid and encouragement of the War Industries Board. The War Service committees in the United States were organized along trade lines under the leadership of the United States Chamber of Commerce and with the consent and cooperation of the War Industries Board. These committees were the media through which a united expression of opinion was obtained from a trade as to programs of standardization. They communicated to the Conservation Section the technical trade information upon which the conservation programs were based and they cooperated with the Conservation Section and with their own trades in formulating the schedule of standardization that would be finally adopted.

War Forced the Lesson

THUS the war ushered in an era of standardization. Under the leadership of the Conservation Section of the War Industries Board the number of different brands was everywhere reduced. Civilian clothing was standardized to a certain extent by the prohibition of cuffs, belts, flaps and peg top trousers with a resulting saving of from 12 to 15 per cent in the yardage per garment. The colors used in making men's hats were reduced from 100 to 9 and at a single meeting of the Conservation Section the variety of straw hats was restricted to 144 instead of 4,000 styles. Our shoes were limited in height and color together with design and the number of different lines was reduced by 66 per cent. The mortality among corsets was high. Only 21 of the 150 styles survived the standardizing process and these 21 were to have been packed in special boxes.

The casualties among bathing caps and rubber goods were also very heavy. A schedule prepared at the time the armistice was signed provided for the discontinuance of 307 grades of hose, 139 grades of rubber belting, 325 classes of fruit jar rings and all except one style of bathing cap. Rubber footwear was standardized by the elimination of 5,500 styles with the result that 29 million cartons, 30,000 gallons of varnish and over 5 million square feet of shipping space would have been saved in the course of a year.

These are but instances of plan which ranged from adding machines to vacuum cleaners. Standardization blazed a trail through the industrial woods reducing the vast motley array of brands to some semblance of order. Here it touched upon adding machines, there it affected the radiator or talking machine industry, at another place it curtailed the number of colors in typewriter ribbons from 150 to 5 or reduced the size of a spool of thread so that 600 carloads of freight would be saved.

As soon as the armistice was signed all of this standardizing process under government direction almost immediately ceased and the manufacturers were left to go back to their old ways or to continue in the new path of standardization as they themselves should decide, but in spite of the short reign of standardization, the policies of the Conservation Section of the War Industries Board have left a lasting impression upon business. Industries have been jolted out of their old ruts, firms that tried for years to reach an agreement with their rivals as to a



B/L Service

We have developed a plan for the handling of Bill of Lading items which we offer for your consideration.

Our special efforts in facilitating payment of documentary drafts and the resulting large volume of our business assures a complete service and liberal terms.

We invite correspondence regarding this plan.

**Union Trust
Company**

Madison and Dearborn Streets

CHICAGO

Capital and Surplus \$4,500,000.00

**THE BILL OF LADING BANK
OF CHICAGO**

Camel Cigarettes

—a statement

CAMEL cigarettes are the result of years of practical experience in the manufacture of tobaccos of superior quality. Our ambition was to produce the most delightful cigarette possible to make.

Hence, it is intensely gratifying to us to state frankly and without qualification, that

Camels superb quality, mildness, mellow body and refreshing flavor have never been equalled by any cigarette in the world at any price!

Appreciation of very unusual and very superior tobacco quality becomes keen after the enjoyment of smoking Camels. Their satisfying excellence is really a revelation.

*Camels are sold everywhere
in scientifically sealed packages
of 20 cigarettes for 20 cents*



R. J. REYNOLDS TOBACCO CO., Winston-Salem, N. C.

Camel

CIGARETTES

The Coming Competition

A new phase in the era of readjustment is here. Industry now faces before-the-war competition under after-the-war conditions. Unrestrained, wasteful production must now give way to production which is carefully planned and effectively controlled.

"In the trying days ahead when my competitors are seeking to secure business at my expense, I want to be protected with the most modern methods of management.

"I need a system of production control that will keep down my investment in high priced raw materials—that will speed up my production and enable me to beat my competitors on deliveries—that will clear my factory of partly finished product held up for indefinite periods by poor planning—and as a natural result give me more cash capital with which to push on for more business."

These are the reasons which impelled one of our clients to commission us to install a comprehensive system of production control in his plant.

GRIFFENHAGEN & ASSOCIATES, LTD.

INDUSTRIAL ENGINEERS,
ACCOUNTANTS, AND
EMPLOYMENT ADVISORS
116 South Michigan Avenue
CHICAGO

limitation on the number of brands have realized their ambition, and business men everywhere having tasted of the fruits of standardization are reluctant to go back to the old wastes.

As for the consumer, he would probably be satisfied with fewer of the eccentricities and more of the solid comforts of life. Perhaps this is not true of the feminine population, but even the women would not object to uniformity where it is not exposed to view—to standardized brick in interior walls, to standardized machinery in factories, to standardized plows, etc. Certainly there is a field where variety is foolish and nothing is to be gained in an artistic or aesthetic sense from the profusion of styles. Perhaps we would all draw the line on uniform cement houses turned out of a single mold, upon a single type of motor car, upon a drab uniform in peace as well as war even though these standardized products would be cheaper.

Not Limited to War

THE full possibilities of standardization are yet only faintly realized. Notwithstanding the work done during the war, we have not yet had time to feel the throb of power generated by standardization working on a national scale. Standardization gathers cumulative force; put into effect in one industry it sweeps through many other industries in ever widening circles. Its full benefits have never been gathered by any nation.

To illustrate the far-reaching economizing influence of standardization, let us take a few concrete examples. Suppose, for instance, that the makes of plows were reduced to the small number that were actually needed to meet the varying conditions of agriculture. The first great saving would result from the fact that a factory making one kind of plow could buy specialized machinery to make each separate part and it could keep that specialized machinery going at full capacity, thus avoiding the waste and delay involved in changing machinery. Demand would be made regular and it would be possible to predict in advance approximately what the future sales would be. Thus there would neither be overproduction or underproduction or the loss involved in a certain type of plow falling into disuse. Moreover, the most economical plow as well as the most efficient plow could be selected for quantity production so that the loss to the farmer caused by using inferior plows would be avoided. The advantage of standardizing would not stop with the making of the plows, however, but would go clear back to the raw materials.

Standardization requires a national unity of will and purpose. Such unity can be attained in war, but in peace it is very difficult. In fact, under our present Sherman Anti-Trust Law it is illegal for manufacturers to standardize their products. To be sure, it is not expressly illegal, and agreements to standardize minor parts of some commodity made by rival manufacturers have frequently been made and are undoubtedly legal, provided the main aspects of competition are not thereby obstructed. Standardization on a large scale would also be legal if it could be separated from all the tendencies toward monopoly that are frowned upon by the Sherman law. Standardization on a large scale, however, can hardly be attained without an unlawful degree of combination, for standardization not only requires the suppression of the individualistic tendencies of manufacturers but it also enforces large-scale production with its tendency to extend its scope to wider markets and its increasing powers to crush the smaller concern with its unique patterns.



BUREAU OF CANADIAN INFORMATION

The Canadian Pacific Railway, through its Bureau of Canadian Information, will furnish you with the latest reliable information on every phase of industrial and agricultural development in Canada. In the complete Reference Libraries maintained at Chicago, New York and Montreal is complete data on natural resources, climate, labor, transportation, business openings, etc., in Canada. Additional data is constantly being added.

No charge or obligation attaches to this service. Business organizations are invited to make use of it.

DEPARTMENT OF COLONIZATION AND DEVELOPMENT

Chicago
165 E. Ontario St.

Montreal, P. Q.
355 Windsor Station

New York
1270 Broadway



A high-priced mechanic idling away the last half hour of the day sweeping and adjusting!

A high-priced mechanic wasting time to help the timekeeper straighten out previous week's time record!!

Observe What Stromberg Time Recorders brought to light the first week!

Observe also that they have furnished an accurate labor cost record, an accurate payroll record, an accurate division between productive and non-productive time, or between day-work and piece-work, and an accurate record of production per unit of time.

Stromberg Electric Co.

McKinlock Building
Wells Street and Jackson Boulevard
CHICAGO

CANADA:

Stromberg Time Recorder Company of
Canada, Ltd., 72 Queen Street, W.,
Toronto, Ontario, Canada

A high-priced mechanic waiting two-tenths of an hour for a job!!!

NON-PARTICIPATING		Page 228	DEPT. 4
O. R. No.	ORDER NO.	EMP. NO.	
<i>J. M.</i>	7011	186	
OPERATION	SWEEPING & Adjusting		
MCH. No.	PIECES	DESCRIPTION	
JUL 13 9 0			
JUL 13 8 5			
ACTUAL ELAPSED	5	TOTAL P.W.	TIME ELAPSED
RATE	60	AMT.	30

INDIRECT PREMIUM		Page 229	DEPT. 4
O. R. No.	ORDER NO.	EMP. NO.	
<i>J. M.</i>		186	
OPERATION	14 ROUND & BEVEL		
MCH. No.	PIECES	DESCRIPTION	
507	3217	#3 & 4 Tops	
JUL 13 8 5			
JUL 13 3 6			
ACTUAL ELAPSED	4.9	TOTAL P.W.	TIME ELAPSED
RATE	60	AMT.	30

DELAYS		Page 230	DEPT. 4
O. R. No.	ORDER NO.	EMP. NO.	
<i>J. M.</i>		186	
Class of Work	1. Absent		
MCH. No.	2. Late		
576	3. Illness		
JUL 13 3 6	4. Personal Business		
JUL 13 3 4	5. Excused		
ACTUAL ELAPSED	0.2	REMARKS	
RATE	60	20 absent time stamps in this time stamp out previous week time stamp	

DIRECT PREMIUM		Page 231	DEPT. 4
O. R. No.	ORDER NO.	EMP. NO.	
<i>J. M.</i>		186	
OPERATION	5 TONGUE & GROOVE		
MCH. No.	PIECES	DESCRIPTION	
515	3000	#9 Plots	
JUL 13 3 4			
JUL 13 0 2			
ACTUAL ELAPSED	3-2	TOTAL P.W.	TIME ELAPSED
RATE	900	AMT.	60

DELAYS		Page 232	DEPT. 4
O. R. No.	ORDER NO.	EMP. NO.	
<i>J. M.</i>		186	
Class of Work	1. Absent		
MCH. No.	2. Late		
	3. Illness		
	4. Personal Business		
	5. Excused		
JUL 13 0 2	6. Waiting for Job		
JUL 13 0 0	7. Material		
ACTUAL ELAPSED	0.2	REMARKS	
RATE	60	12	



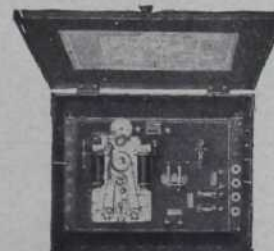
Secondary Clock



Time Stamp



In-and-Out-Recorder



Programme Instrument

STRENGTH

WITH PLENTY OF MARGIN FOR THE EMERGENCY

FROM the standpoint of materials, it is reasonable to assume that every motor truck is strong. The intelligent truck purchaser can judge material strength by appearance. But continuous performance demands strength of design to supplement strength of materials. It is an honest combination of the two which enables the Clydesdale truck to serve its owner faithfully without costly interruptions.



For instance, the Clydesdale frame is of pressed steel, *shaped so that the greatest strength comes at the point of greatest strain*. It is two inches deeper than the average, and is gusseted at every corner and cross member, so that no twist of road or load can possibly bend it. Compare this construction with rolled steel frames which cannot be so shaped, and one reason for Clydesdale sturdiness is apparent. Fewer repairs and slower depreciation are worth considering.

THE CLYDESDALE MOTOR TRUCK CO.
Clyde, Ohio

CLYDESDALE

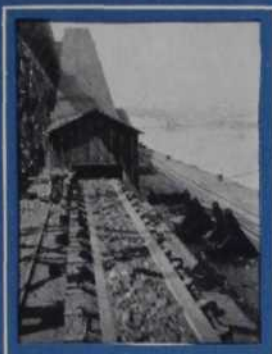
MOTOR • TRUCKS



How This Controller Conserves Strength

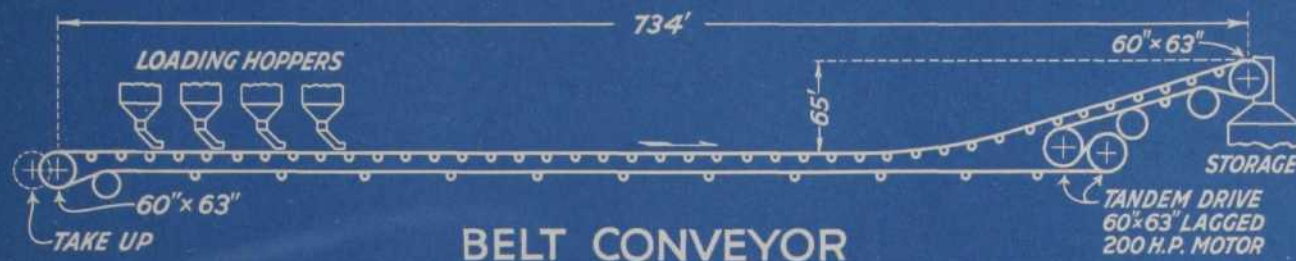
The strength of most trucks is taxed to the utmost by the sudden strain put upon them when the motor is raced to get the load quickly under way. The speed of the motor is too great for the starting speed of the rear wheels, and every part is called upon to stand the shock until the speed

is equalized. With the Clydesdale Controller to act on the gas supply, this cannot happen, since the motor starts the load slowly and picks up gradually to the speed set on the throttle. No part is jerked into doing more than its share.



ZENITH FURNACE COMPANY
DULUTH, MINN.

SPECIFIED:— GOODYEAR BELT
54"—11 PLY CONVEYOR BUILT TO MEET CONDITIONS
32 OZ. DUCK — $\frac{7}{32}$ " TOP, $\frac{1}{16}$ " PULLEY COVER
MATERIAL—BITUMINOUS COAL **CAPACITY 1200 TONS PER HOUR**
SPEED — 500 FT. PER MIN. **INSTALLED — APRIL 28, 1916**
AMOUNT OF MATERIAL CARRIED TO DATE—2,000,000 TONS



Copyright 1920, by The Goodyear Tire & Rubber Co.

Half the Unloading Time—And the G. T. M.

They unload a 10,000-Ton Cargo of coal in from 10 to 12 hours at the Zenith Furnace Company's dock in Duluth, Minn., with the aid of their specially built Goodyear Conveyor Belt. To do the same job used to take from 20 to 24 hours. So the economy of the great belt tells in money saved by swift and trouble-free conveying and in quick clearance of the boats that have to make every hour count in the limited season on the inland seas.

The long life and operating economy of this conveyor are striking tribute to the value of scientific analysis in the specification, design and construction of a belt to the particular duty required of it. This belt was built and installed on the expert analysis principle which is the working method of the G. T. M.—Goodyear Technical Man.

Every service condition was carefully analyzed, with Zenith Furnace Company officials co-operating in furnishing operating data. The conveyor is troughed and driven by a 200 H. P. motor, with gear and clutch arrangement regulating the speed, sometimes at 300 feet per minute, usually at 500 F. P. M. The drive is tandem, with lagged pulleys. Head, tail and drive pulleys are all 60" in diameter, with 63" face. Troughing idlers are spaced three

feet center to center, return idlers, 8' 3". The belt itself is 1,525 feet long, 54 inches wide, 11-ply special construction throughout, with $\frac{7}{32}$ " top cover and $\frac{1}{16}$ " bottom cover.

Its staunch, Goodyear character is best revealed by its condition in this, its fifth season, after having carried more than 2,000,000 tons. The average wear on its specially compounded cover is one sixty-fourth of an inch. Only a high grade cover stock such as Goodyear Conveyor Belts have could resist with less than 10% wear the weather and abrasion conditions that this belt has withstood. It looks good, Supt. Collins says, for years to come.

The qualities of Goodyear Conveyor Belts are summed up in ability—ability to carry the tonnage, to resist abrasion, to work steadily under varying atmospheric conditions, to set up new records for economical conveying, to operate with a notable freedom from trouble, to last a long time, and to protect our good name.

If you have a conveying problem it is to your advantage to have the G. T. M. analyze it with a view to your profit. Write about it to The Goodyear Tire & Rubber Company, Akron, Ohio, or Los Angeles, California.

GOODYEAR
CONVEYOR BELTS

The Transportation Question Every Business Executive Must Answer

"**A**RE YOU bringing your transportation equipment up to the assured demands of this fall and winter?"

The railroad situation is gradually improving, but railroad equipment is admittedly five years behind the business needs of the present.

Good business judgment demands an immediate stock-taking of your present transportation equipment.

Motor trucks are being called upon to handle a constantly increasing share of the country's short haul transportation. They can relieve your business of a large part of the delay and annoyance incident to the railroad situation.

By assuming more of the short haul traffic they can help set free to your advantage the full complement of railroad equipment for long haul and bulk shipments.

Motor trucks will give your business a valuable measure of transportation independence.

THE AUTOCAR COMPANY, Ardmore, Pa., Established 1897

The Autocar Sales and Service Company

New York	Boston	Philadelphia	Pittsburgh	Chicago	San Francisco
Brooklyn	Providence	Camden	Baltimore	St. Louis	Sacramento
Bronx	Worcester	Allentown	Washington	Los Angeles	Oakland
Newark	New Haven	Wilmington	Richmond	San Diego	Stockton
Schenectady	Springfield	Atlantic City	Atlanta	Fresno	San José

Represented by these Factory Branches, with Dealers in other cities

Autocar

Wherever there's a road